

# *Specifications and Drawings for Building the Ergonomic Backstrap Weaving Bench*

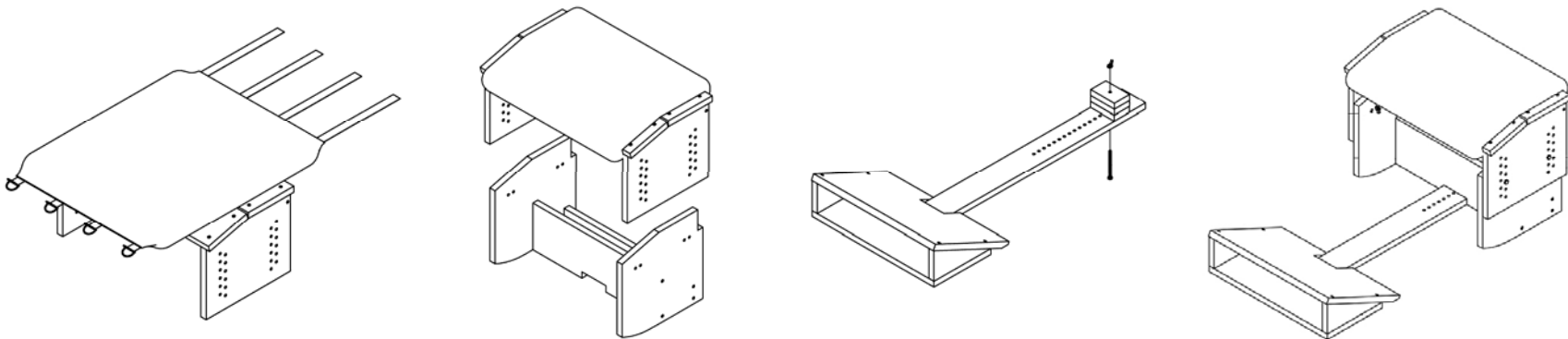
*by Karen Piegorsch*

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# Preface

## Acknowledgements

Synergo Arts is grateful to Glenn Smith for his collaboration with Karen Piegorsch in designing the original Ergonomic Weaving Bench for backstrap weavers; to Guatemalan organizations Oxlajuj B'atz', Mayan Hands and Maya Traditions for facilitating the pilot project through which the bench was developed; and to Carlos Sahon Raxtun and Clemente Ruíz for their participation in the pilot project.

We would like to thank Cindy Lair, Tom Culbreth, Bruce Billings, Randy Hansen, Rick Ross and Alex McConnell for their design and construction suggestions following the pilot project.

Special thanks are given to Keith Berry, Duncan Fleming and Erika Fretheim for their help with the preparation of the engineering drawings.

We would also like to express our profound gratitude to Juana Ramos for her collaboration in assuring the cultural appropriateness of the educational materials for backstrap weavers; to Don Morelli for editorial input in English; and to Caroline Villa, Diego Villa and Juan Carlos Diaz David for their guidance in expressing the content of these *Specifications and Drawings* in Spanish.

## About Synergo Arts

Synergo Arts, a nonprofit organization, is the education, consulting, and design resource for the Ergonomic Weaving Bench. The mission of Synergo Arts is to maximize the health, income, creativity, performance, productivity and craft quality of communities of backstrap weavers around the world.

Synergo Arts envisions a world in which the Ergonomic Weaving Bench empowers communities of backstrap weavers to create more prosperous, healthy lives through the application of ergonomic knowledge and sustainable innovations.

The author, Karen Piegorsch, is the founder and president of Synergo Arts, and leader of the team that designed the Ergonomic Weaving Bench for backstrap weavers. She is an ergonomist who holds a Bachelor's degree in physical therapy, a Master's degree in industrial engineering, and a PhD in public health.

## About the Ergonomic Weaving Bench project

The Ergonomic Weaving Bench was designed through a participatory process with backstrap weavers. The project was initiated in response to interest from within the indigenous communities in Guatemala, where women had been looking for alternatives to their traditional kneeling posture.

### *Traditional weaving methods*

For centuries, women have created beautiful textiles using the backstrap loom. The weaver straps the loom onto her hips, and rocks back and forth to adjust the tension on the cloth. In effect, her body becomes integrated with the loom, and while the loom itself is simple, the process is dynamic and sophisticated.

This ancient weaving tradition is hard on the body. Pain, numbness and fatigue limit the length of time a weaver can work, and are readily evident in how slowly and stiffly she moves when getting up from the ground. Despite chronic, disabling symptoms, women tend to push their bodies through fatigue and pain in order to provide for their families. This pattern sets up a vicious cycle which ultimately limits earning potential.

### *How the Ergonomic Weaving Bench helps*

Unlike traditional methods for weaving with a backstrap loom, the Ergonomic Weaving Bench works in harmony with the weaver's body. It rocks with the

rhythm of her movement. The height of the specially shaped, padded seat can be adjusted to fit the individual. Because it is adjustable, the bench can be shared by other weavers in the family or community. An interlocking footrest provides leverage and stability.

### *Educational Resources*

Synergo Arts makes the following educational resources available online:

- These *Specifications and Drawings* for builders of the bench, in English and Spanish, in PDF;
- A 10-minute video about the ergonomic features of the bench:  
[www.youtube.com/watch?v=w52sFcL8y4I](http://www.youtube.com/watch?v=w52sFcL8y4I) (English);  
[www.youtube.com/watch?v=6U530lm\\_mjg](http://www.youtube.com/watch?v=6U530lm_mjg) (Spanish);
- A *User's Guide*, in English and Spanish, in PDF;
- A *Quick Reference Card* for bench users, in English and Spanish, in PDF.

## About these *Specifications and Drawings*

Synergo Arts is proud of its Ergonomic Weaving Bench for backstrap weavers. These *Specifications and Drawings* contain important information about how to safely and properly build, sell, use, and care for ergonomic weaving benches.

These *Specifications and Drawings* are designed to be used in conjunction with a 10-minute educational video that Synergo Arts produced to educate builders about the ergonomic features of the bench. The video is available online at:

[www.youtube.com/watch?v=w52sFcL8y4I](http://www.youtube.com/watch?v=w52sFcL8y4I) (English);

[www.youtube.com/watch?v=6U530Im\\_mjg](http://www.youtube.com/watch?v=6U530Im_mjg) (Spanish).

Please read these *Specifications and Drawings*, watch the video online, and follow the instructions and warnings carefully before building, selling, or using a weaving bench based on this educational information.

All information contained in these *Specifications and Drawings* is current at the time of printing. Because Synergo Arts is committed to continuous product development, we reserve the right to make product, design, and informational changes without notice. Please feel free to contact Synergo Arts at any time for additional or new information.

## **WARRANTY, DISCLAIMERS, AND WHAT IS NOT COVERED**

Synergo Arts is providing educational information so that Ergonomic Weaving Benches can be built for back strap weavers. Synergo Arts is **NOT** in the business of manufacturing or selling complete, usable Ergonomic Weaving Benches. **THESE SPECIFICATIONS AND DRAWINGS ARE MADE AVAILABLE "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES FROM SYNERGO ARTS. SYNERGO ARTS DISCLAIMS ALL WARRANTIES WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED, TO THE FULLEST EXTENT ALLOWED BY APPLICABLE LAW. NO IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY SHALL APPLY EXCEPT AS REQUIRED BY APPLICABLE LAW.** Synergo Arts does not authorize any person or business entity, including its authorized dealers, to create for it any obligations, liabilities, or other warranties in connection with these educational resources. **SYNERGO ARTS SHALL NOT BE LIABLE FOR ANY INCIDENTAL, INDIRECT, CONSEQUENTIAL, SPECIAL, OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY IMPLIED WARRANTY.** This limitation shall apply to Synergo Arts and its officers, members, employees, agents, counsel, and other representatives.

## **IMPORTANT DEFINITIONS**

Synergo Arts is concerned about the safety of builders and users of weaving benches made based on these specifications and drawings. Danger, Warning and Caution symbols point out important safety and operational instructions, which if not followed could cause serious injury to persons or damage to the bench.



The safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.



### **DANGER**

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury to persons.



### **WARNING**

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury to persons, or damage to your bench.



### **CAUTION**

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury to persons, or damage to your bench.

## **RESPONSIBILITIES OF THE BUILDERS AND SELLERS**

Synergo Arts has prepared these specifications and drawings for experienced carpenters who are aware of how to safely handle carpentry tools, equipment and raw materials.

In addition, Synergo Arts has included in this educational resource a *Quick Reference Card* for weavers, so that those who build and sell benches can help the weavers use the bench safely.

Those who build and sell ergonomic benches based on the Synergo Arts educational resources have the following responsibilities:

- 1) To accept full responsibility for their own knowledge, skill and safety with the handling of carpentry tools, equipment and raw materials while making benches;
- 2) To study all of the materials included in these specifications and drawings and the online video before making, selling or using a bench based on these educational resources;
- 3) To precisely follow the Synergo Arts recommendations and heed all warnings contained in the specifications and drawings, and the online video when they begin making weaving benches;

**(responsibilities continued on next page)**

**(Builders' and Sellers' Responsibilities, continued from the previous page)**

- 4) To ensure that, if in the future they choose to deviate from the original design, they will preserve the ergonomic and safety features in any weaving benches they make;
- 5) To always include a cushion with each bench they sell, recognizing that the cushion is an integral part of the weaving bench;
- 6) To always include the 2-page *Quick Reference Card* with each bench they sell, recognizing that this information will help ensure the safety of the weavers. (The *Quick Reference Card* is provided on the last two pages of this publication).
- 7) To recognize and inform potential users that the weight capacity of the bench can be dependent upon a variety of factors including, for example: quality of materials such as plywood grade or foam density; quality of construction such as fastening with both glue and screws; and use patterns such as frequency, duration, environmental conditions.
- 8) To recognize and inform potential users that bench height (defined as the distance from the floor to the top of the cushion) ranges from approximately 14 to 19 1/2 inches for the original bench, with additional variability related to the characteristics of the foam cushion. Potential users of the bench should refer to instructions (in either the *Quick Reference Card*, the online video, or the *User's Guide*), to determine whether their personal measurement corresponds to the adjustable range for the height of the bench.

# Parts List and Assembly Drawings – Overview

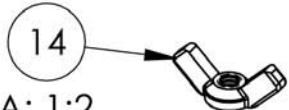
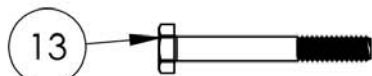
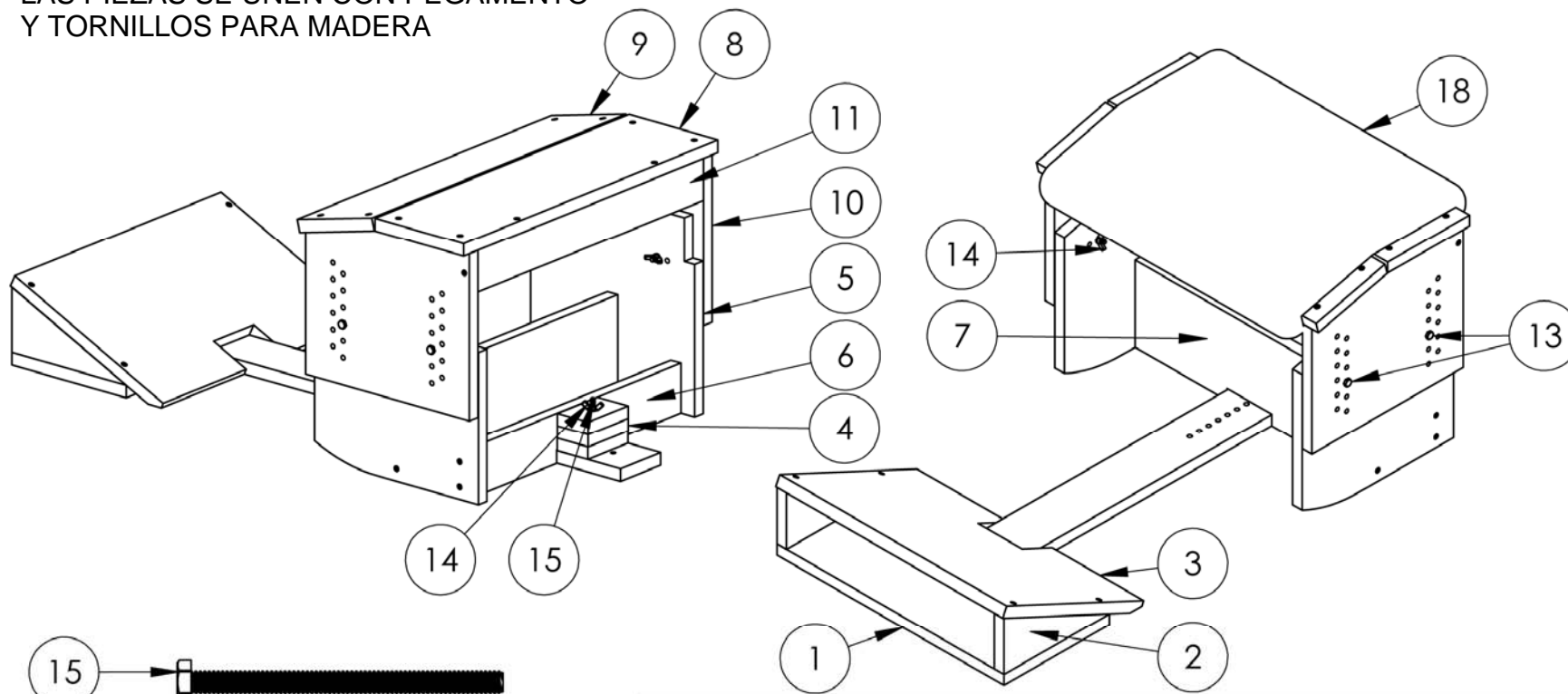


**NOTES:**

PARTS ARE GLUED AND SCREWED  
TOGETHER

LAS PIEZAS SE UNEN CON PEGAMENTO  
Y TORNILLOS PARA MADERA

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	PART 15 CHANGED TO FULL THREAD	5/17/2009	E. FRETHEIM



SCALE, ESCALA: 1:2

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DRAWN BY, DIBUJADO POR E. FRETHEIM		DATE, FECHA 4/18/2009	
NEXT ASSEMBLY			
<div><div><div>Synergo Arts</div><div>Ergonomics for Artists and Artisans</div><div>© 2008 Synergo Arts, all rights reserved © 2008 Synergo Arts, todos los derechos reservados</div></div><div><div>ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</div><div>DEL TELAR DE CINTURA</div></div></div>			
PROJECTION, PROYECCIÓN			
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SIZE, TAMAÑO A	REV 1
		DWG no., DIBUJO no. PARTS LIST - LISTADO DE COMPONENTES	
SCALE, ESCALA: 1:10		SHEET, HOJA: 1 OF 7	

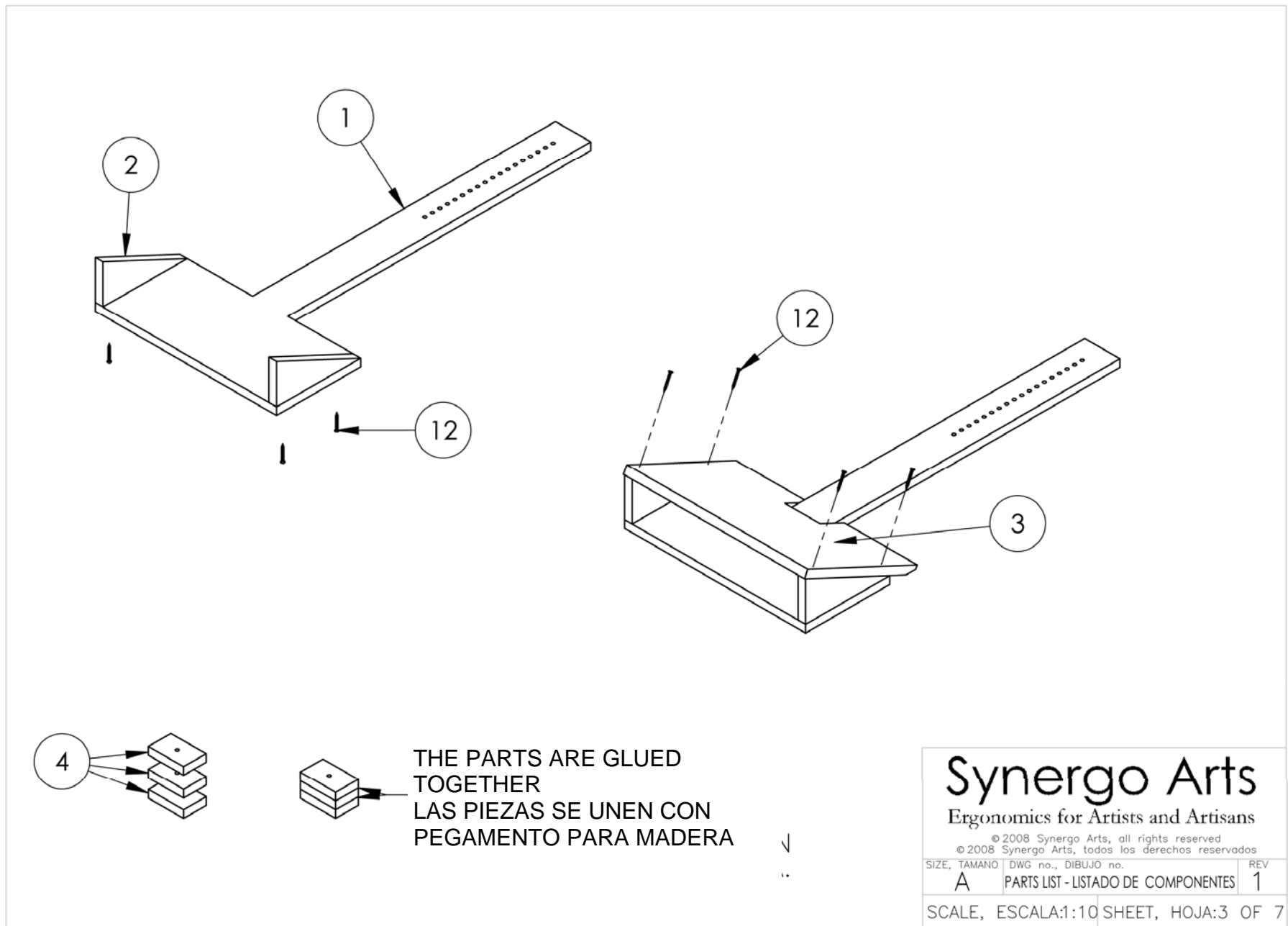
NUMBER	QTY.	DESCRIPTION	DESCRIPCIÓN
1	1	FOOT REST - BASE	APOYO PIES - BASE
2	2	FOOT REST - GUSSET	APOYO PIES - LADO TRIANGULAR
3	1	FOOT REST - TOP BOARD	APOYO PIES - SUPERFÍCIE
4	3	FOOT REST - STOP BLOCK	APOYO PIES - BLOQUECITO
5	2	SEAT BASE - SIDE BOARD	BASE DEL ASIENTO - TABLA DEL LADO
6	1	SEAT BASE - CROSS BOARD - BACK	BASE DEL ASIENTO - TRAVESANO POSTERIOR
7	1	SEAT BASE - CROSS BOARD - FRONT	BASE DEL ASIENTO - TRAVESANO ANTERIOR
8	1	SEAT TOP - FLAT BOARD	ASIENTO PARTE SUPERIOR -TABLA PLANO
9	1	SEAT TOP -ANGLE BOARD	ASIENTO PARTE SUPERIOR – TABLA INCLINADO
10	2	SEAT TOP - SIDE BOARD	ASIENTO PARTE SUPERIOR – TABLA DEL LADO
11	1	SEAT TOP – CROSS BOARD	ASIENTO PARTE SUPERIOR – TRAVESANO POSTERIOR
12	28	SCREW, WOOD, 2"	TORNILLO PARA MADERA, 2"
13	4	SCREW, HEX, PARTIAL THREAD (CARRIAGE BOLT), 1/4"-20X2"	TORNILLO, CABEZA HEX, HILO PARCIAL, 1/4"-20X2"
14	5	NUT, WING, 1/4"-20	TUERCA, MARIPOSA, 1/4"-20
15	1	SCREW, HEX, (CARRIAGE BOLT), 1/4"-20X3.5"	TORNILLO, CABEZA HEX, 1/4"-20X3.5"
16	1	WOOD GLUE	PEGAMENTO PARA MADERA
17	1	WOOD SEALANT	BARNIZ
18	1	SEAT CUSHION	COJIN

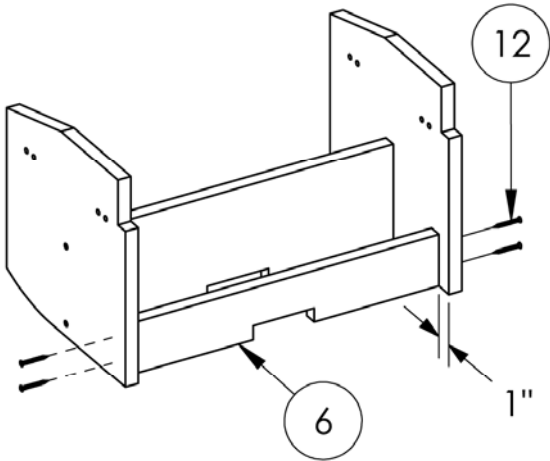
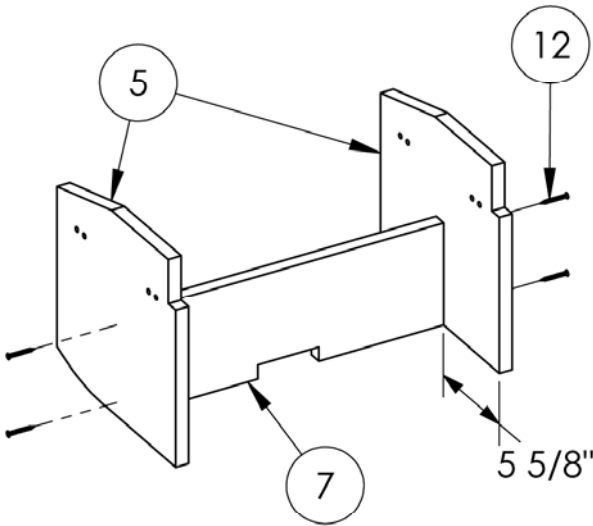
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SIZE, TAMAÑO	DWG no., DIBUJO no.	REV
A	PARTS LIST - LISTADO DE COMPONENTES	1
SCALE, ESCALA:1:10 SHEET, HOJA:2 OF 7		



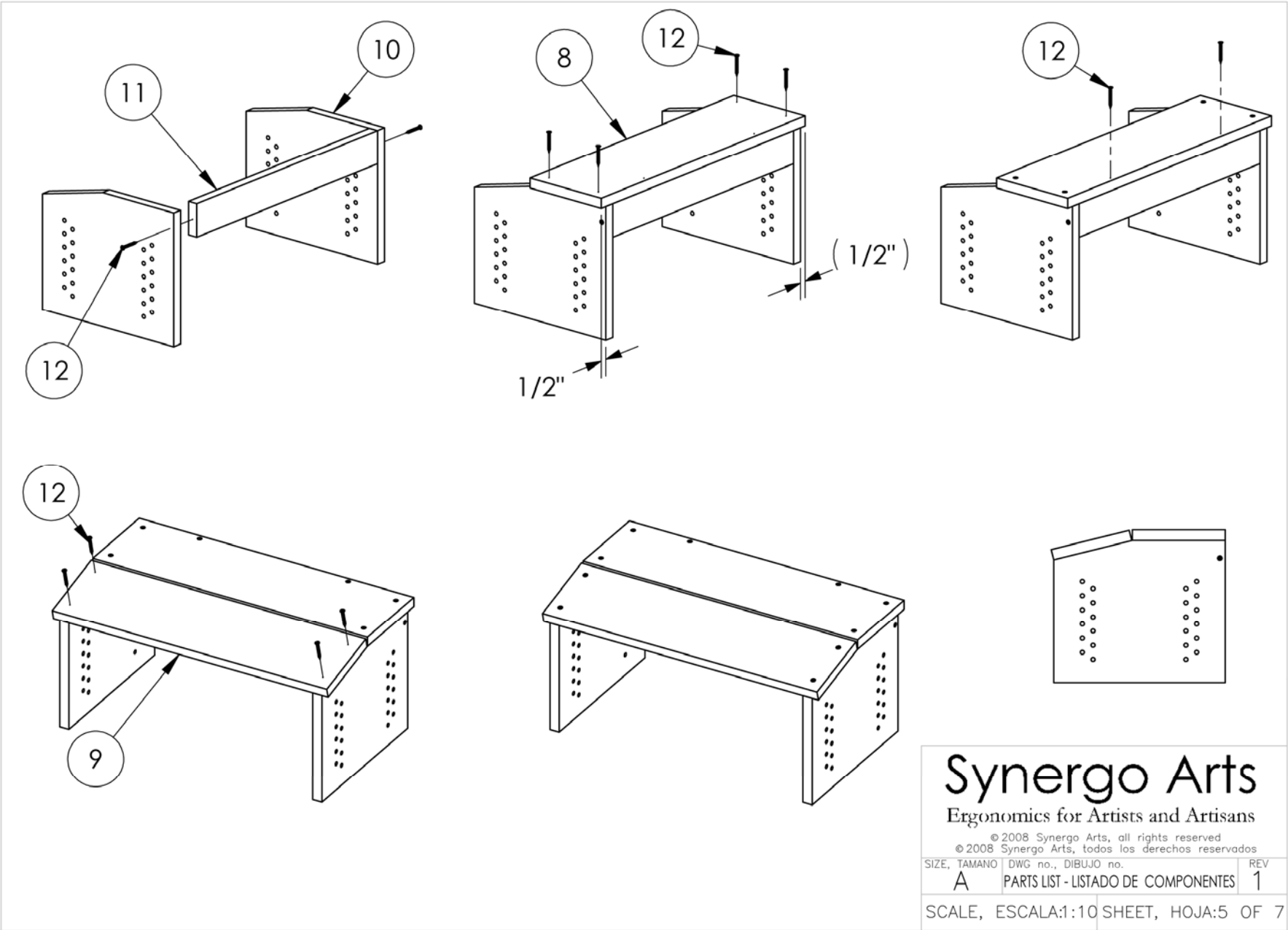


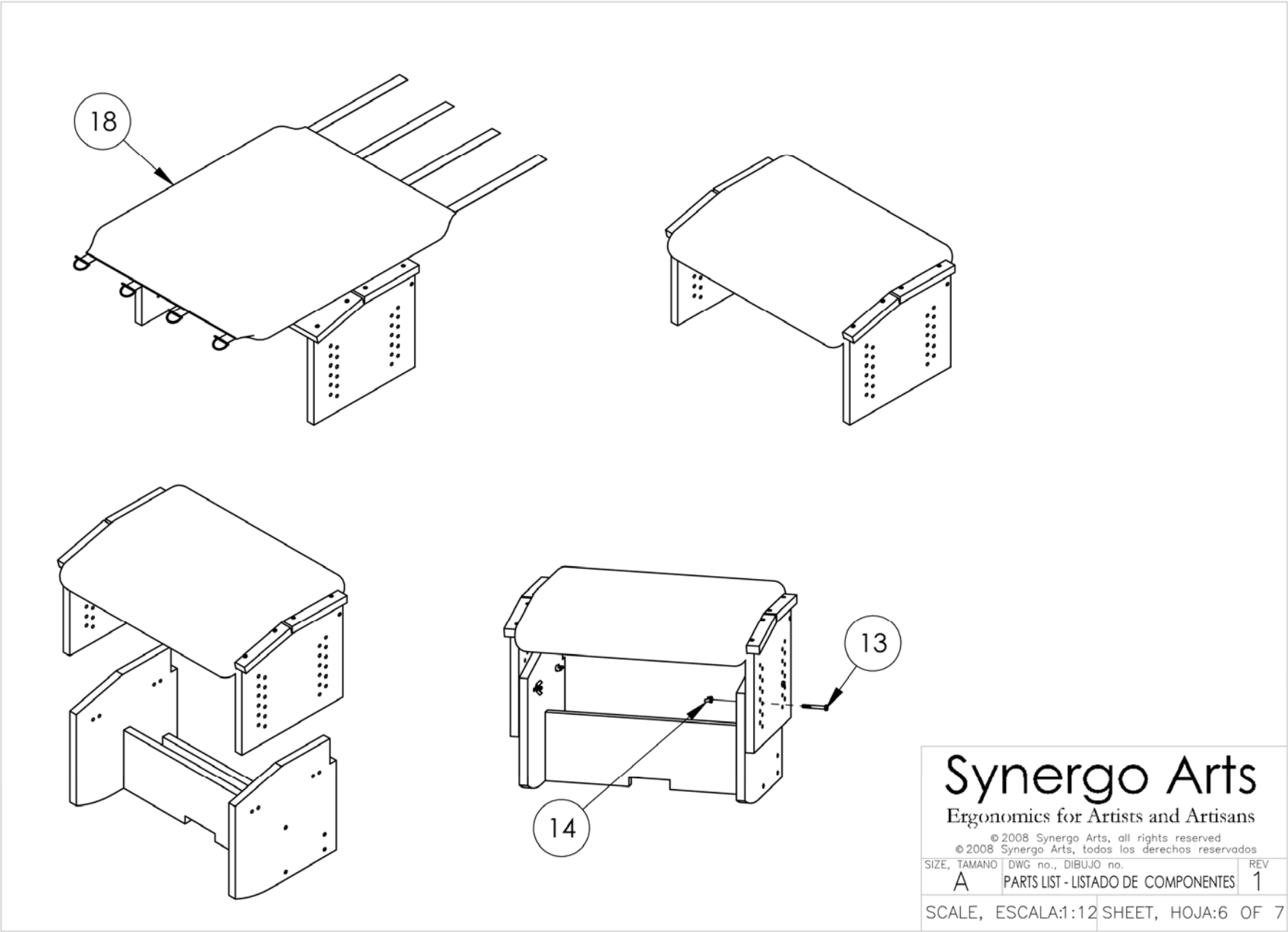
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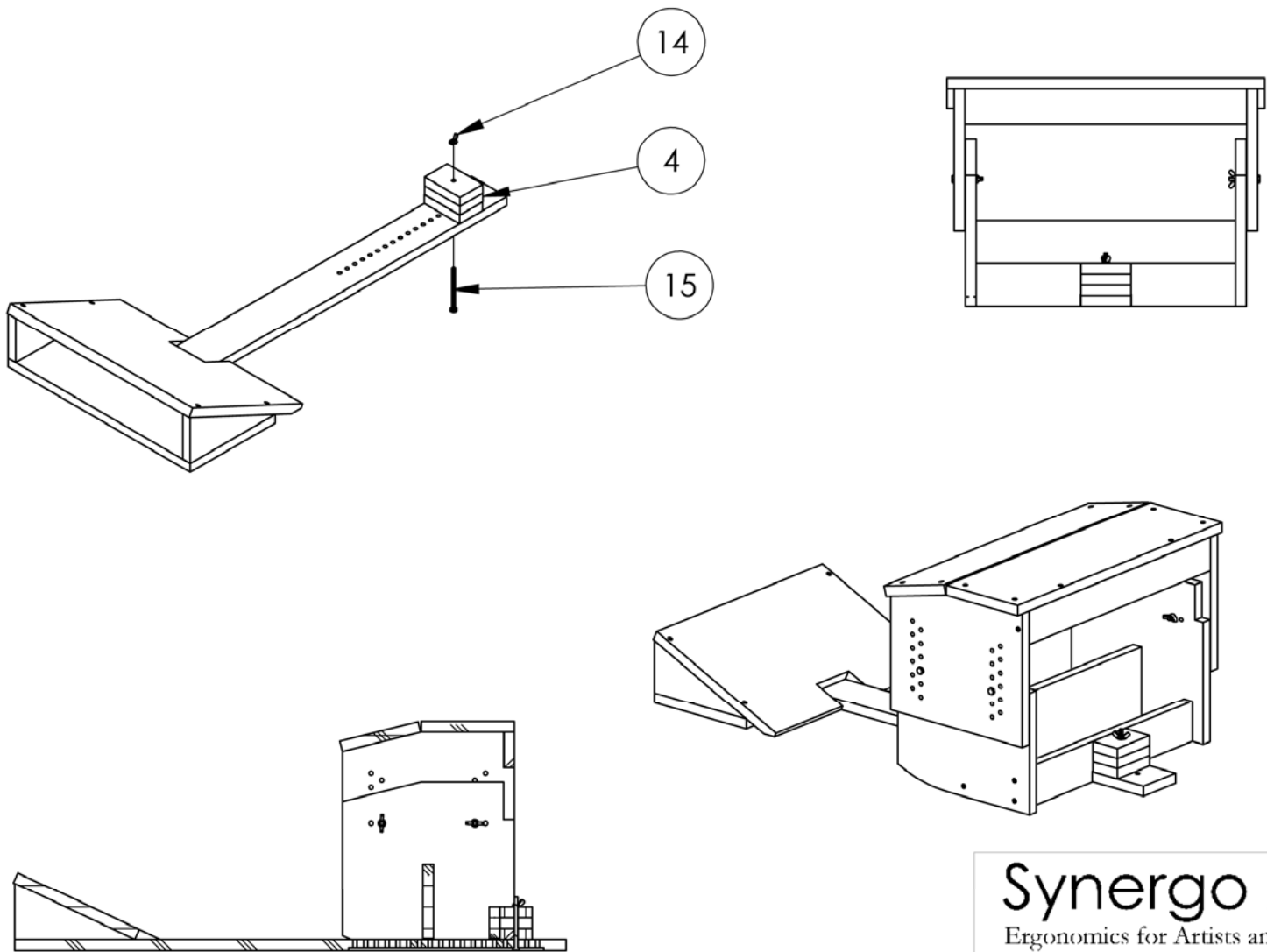
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SIZE, TAMAÑO	DWG no., DIBUJO no.	REV
A	PARTS LIST - LISTADO DE COMPONENTES	1
SCALE, ESCALA:1:10 SHEET, HOJA:4 OF 7		







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SIZE, TAMAÑO	DWG no., DIBUJO no.	REV
A	PARTS LIST - LISTADO DE COMPONENTES	1

SCALE, ESCALA:1:12 SHEET, HOJA:7 OF 7

## Plywood – Details

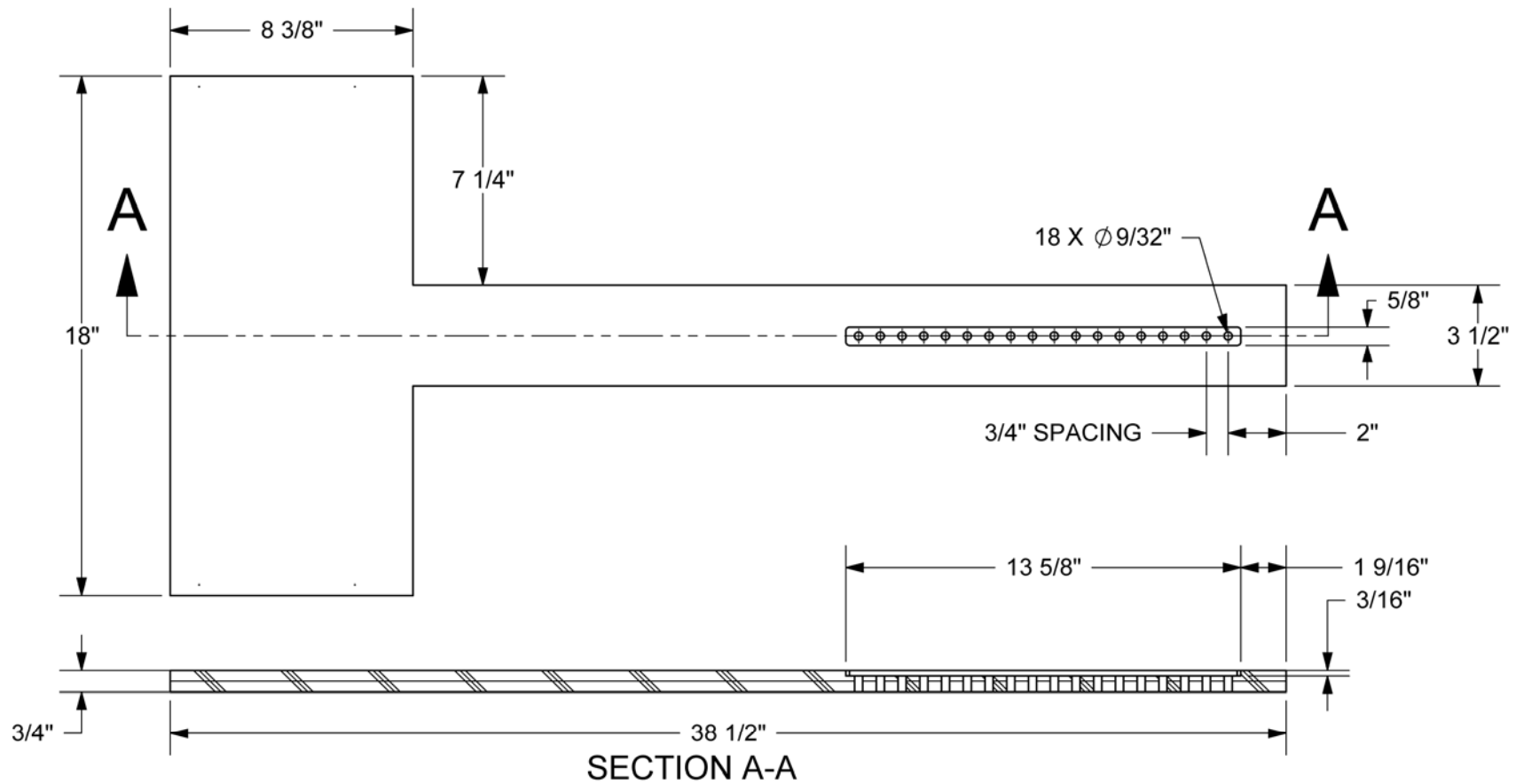
### Detailed drawings

- Part #1 Footrest - Base
- Part #2 Footrest - Gusset
- Part #3 Footrest - Top Board
- Part #4 Footrest - Stop-block
- Part #5 Seat Base - Side Board
- Part #6 Seat Base - Cross Board - Back
- Part #7 Seat Base - Cross Board - Front
- Part #8 Seat Top - Flat Board
- Part #9 Seat Top - Angle Board
- Part #10 Seat Top - Side Board
- Part #11 Seat Top - Cross Board

IMPORTANT INFORMATION about cutting plywood Part #11

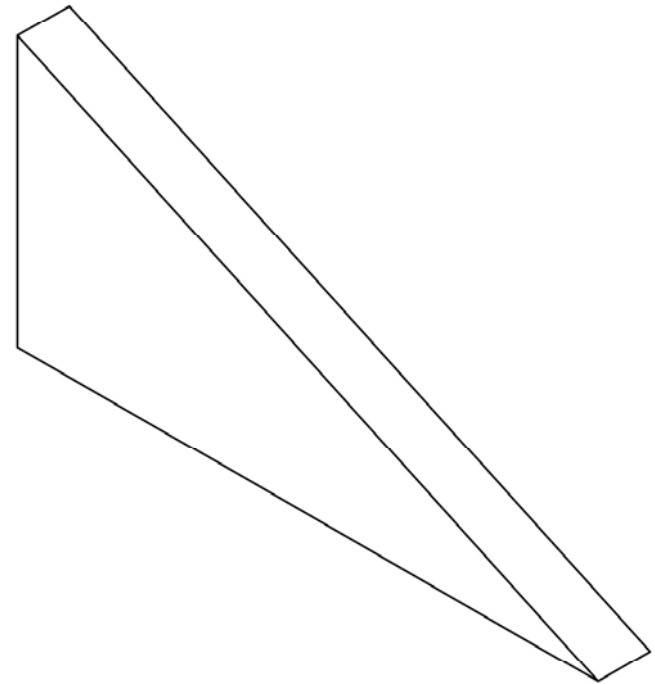
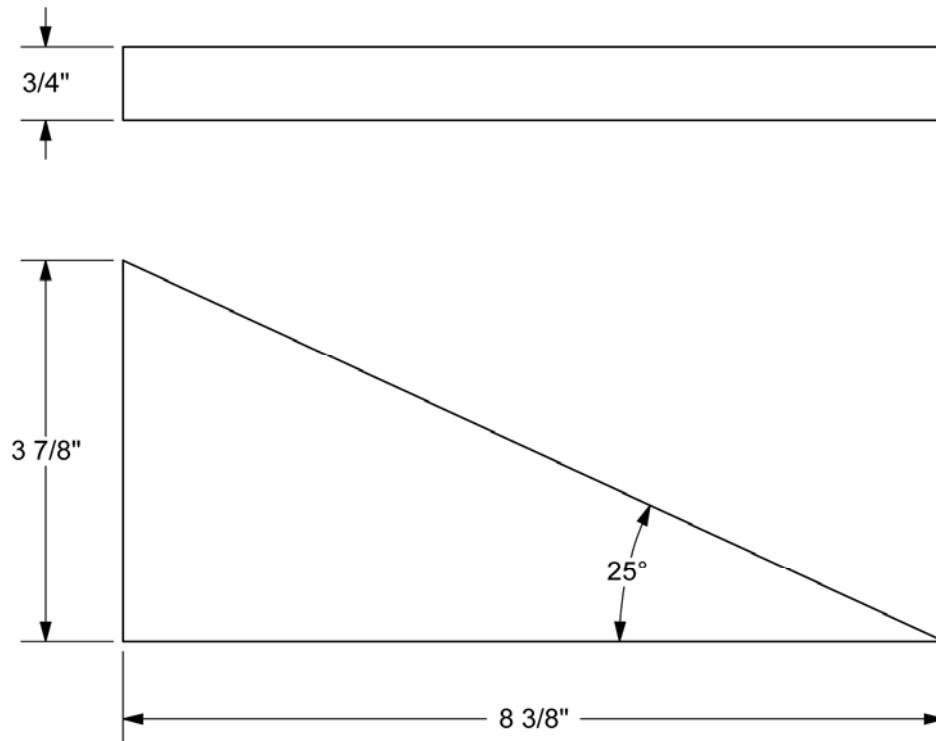
Layout drawing for yield from plywood



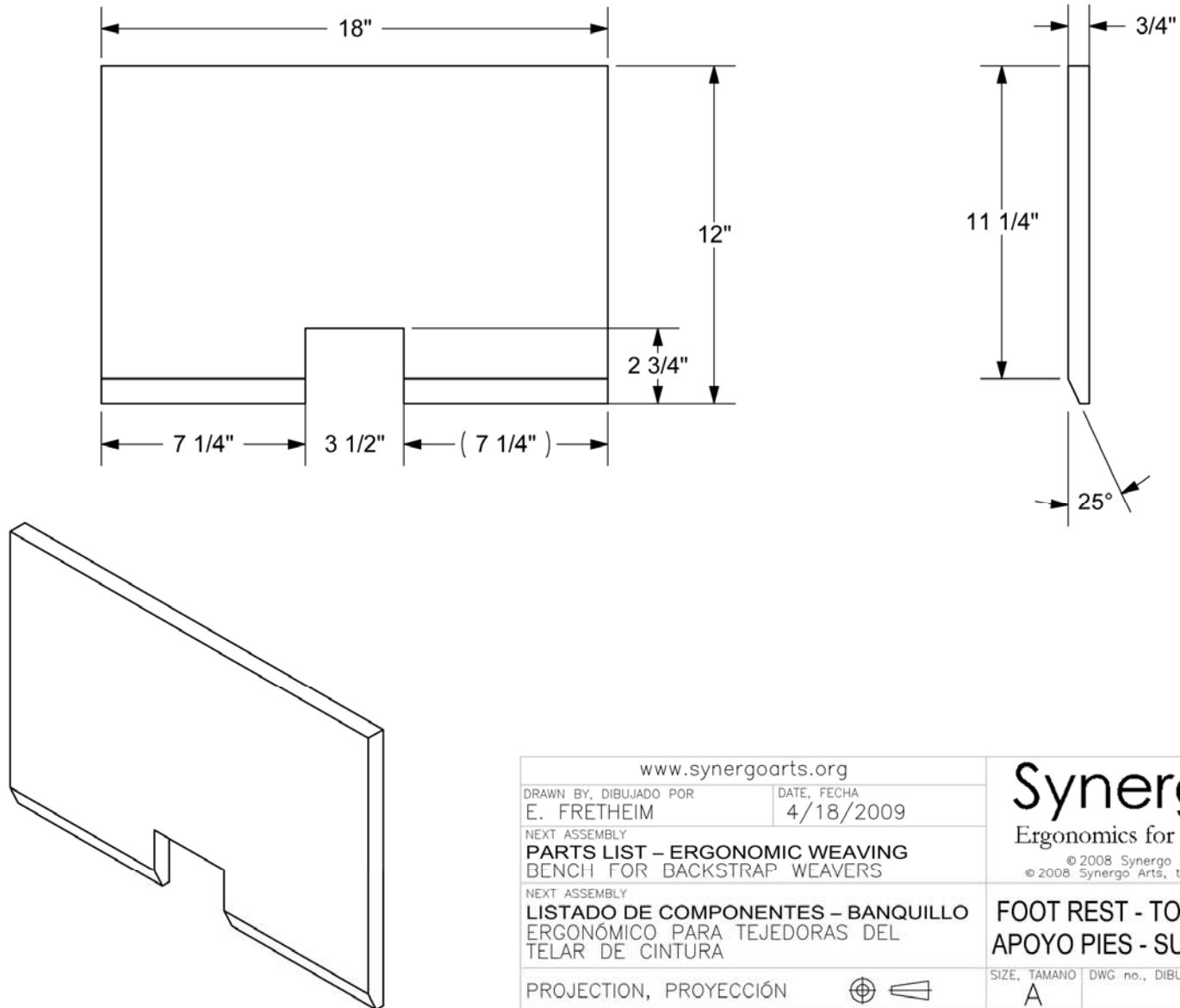


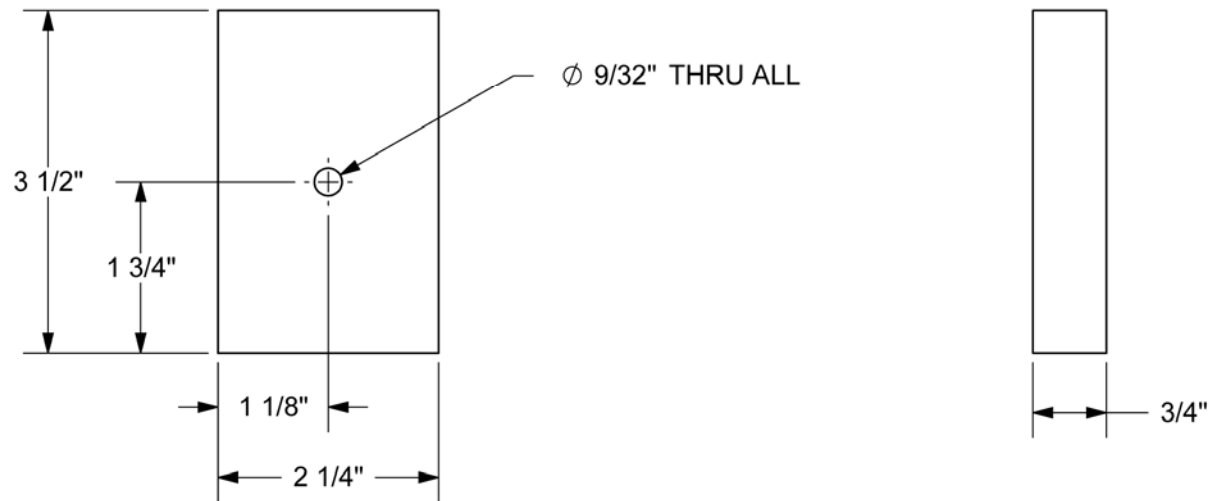
SECTION A-A

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NEXT ASSEMBLY <b>PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</b>		<b>FOOT REST - BASE APOYO PIES - BASE</b>		
NEXT ASSEMBLY <b>LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA</b>				
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO A	DWG no., DIBUJO no. 1	REV 0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA: 1:6 SHEET, HOJA: 1 OF 1		

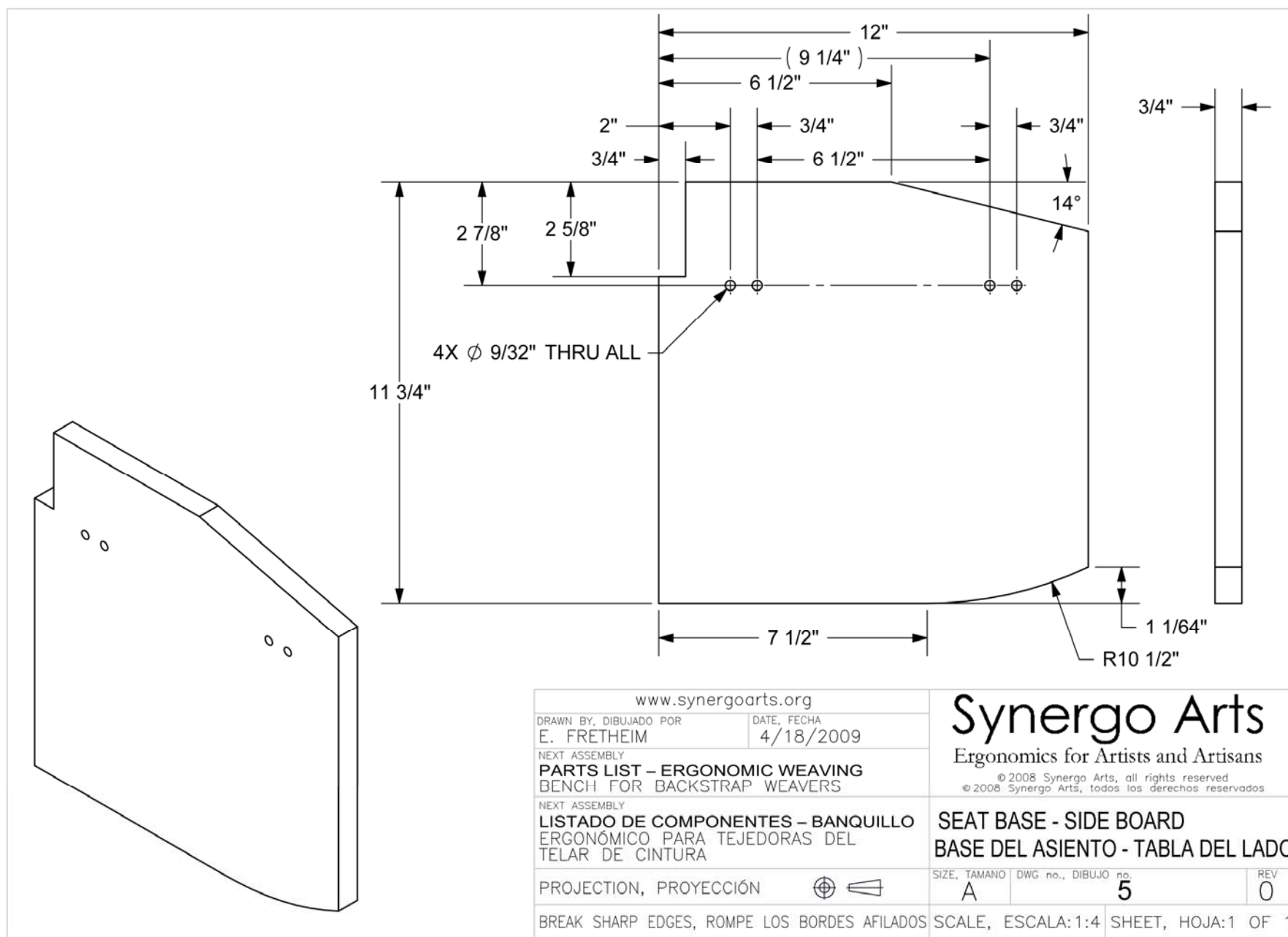


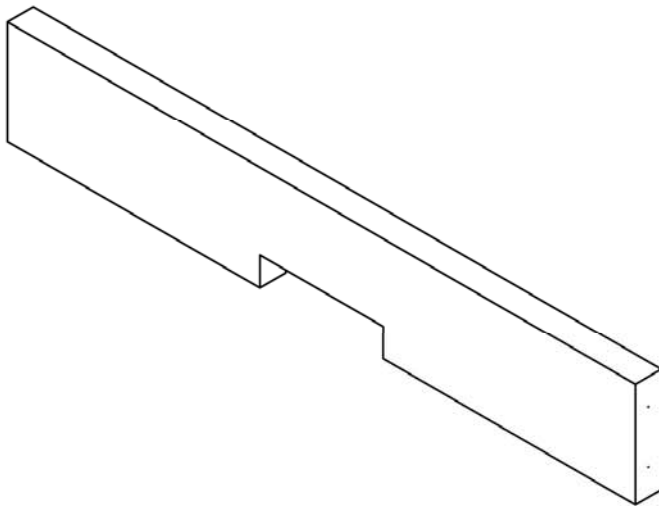
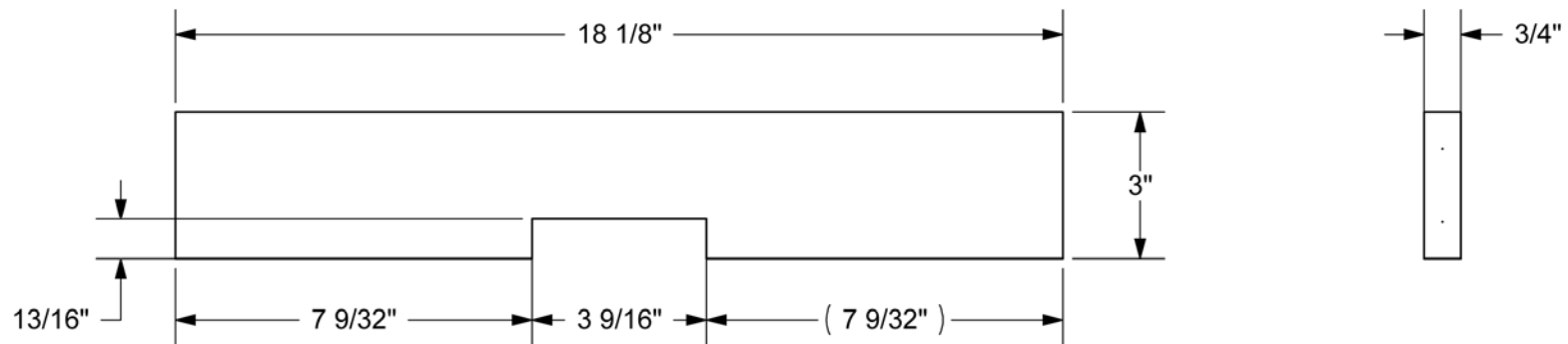
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NEXT ASSEMBLY		<b>FOOT REST - GUSSET</b> <b>APOYO PIES - LADO TRIANGULAR</b>	
<b>PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</b> LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA		SIZE, TAMAÑO	REV
PROJECTION, PROYECCIÓN 		A	0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA: 1:2	SHEET, HOJA: 1 OF 1



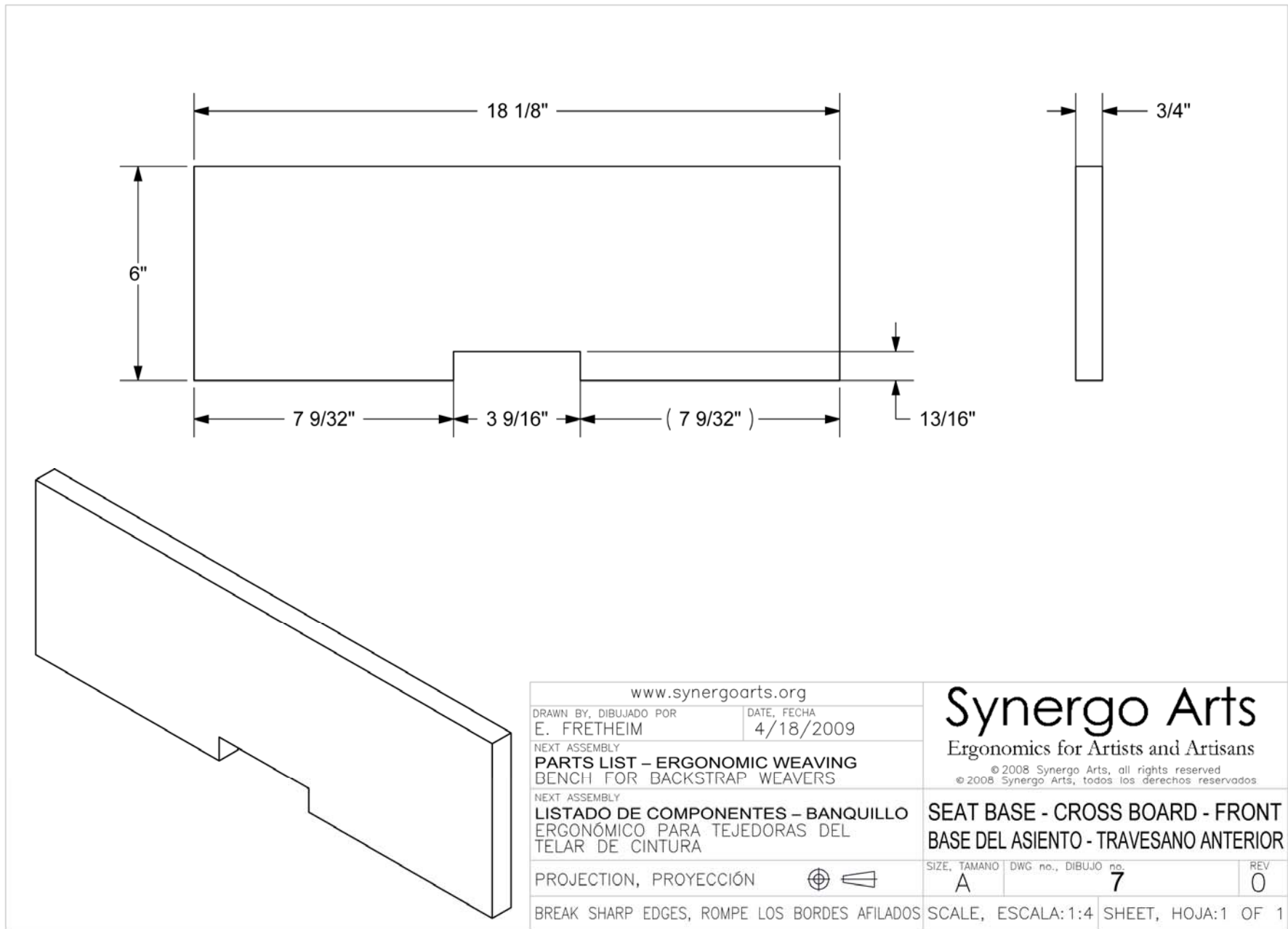


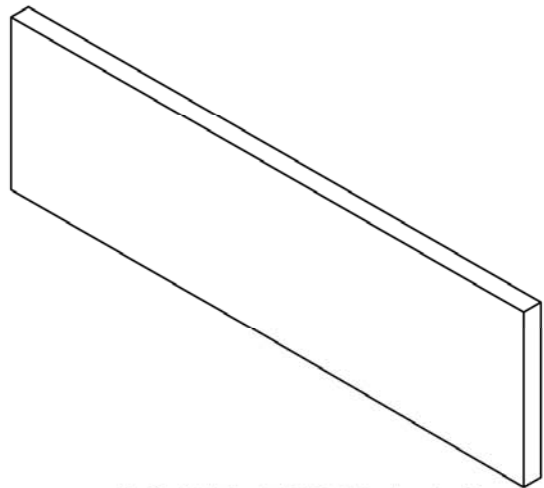
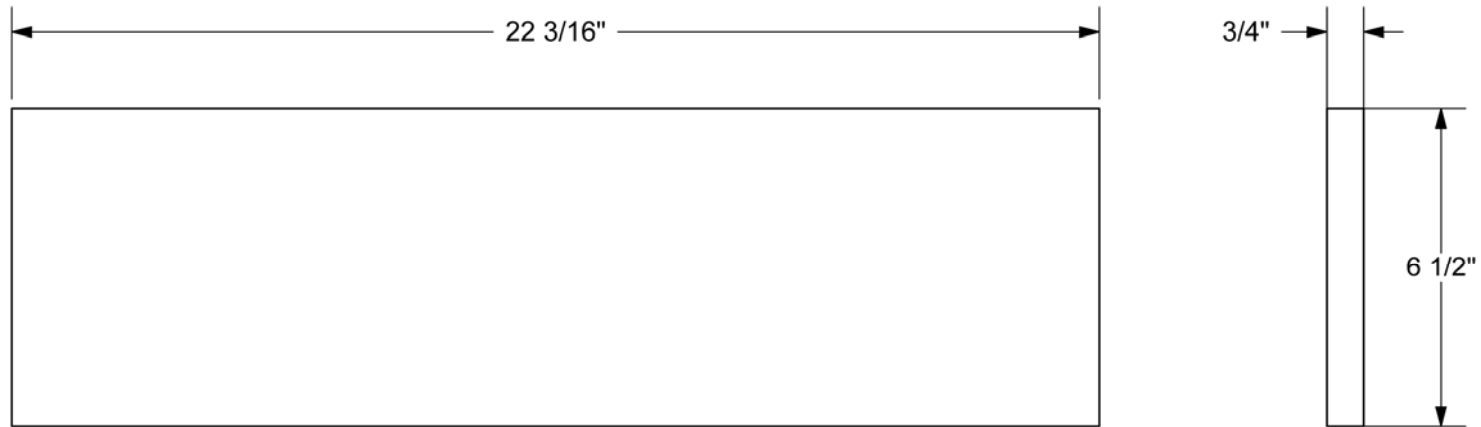
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<b>PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</b>			
NEXT ASSEMBLY			
<b>LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA</b>		<b>FOOT REST - STOP BLOCK APOYO PIES - BLOQUECITO</b>	
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO	REV
		A	0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA: 1:2	SHEET, HOJA: 1 OF 1





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NEXT ASSEMBLY <b>PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</b>		<b>SEAT BASE - CROSS BOARD - BACK BASE DEL ASIENTO - TRAVESANO POSTERIOR</b>		
NEXT ASSEMBLY <b>LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA</b>				
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO A	DWG no., DIBUJO no. 6	REV 0
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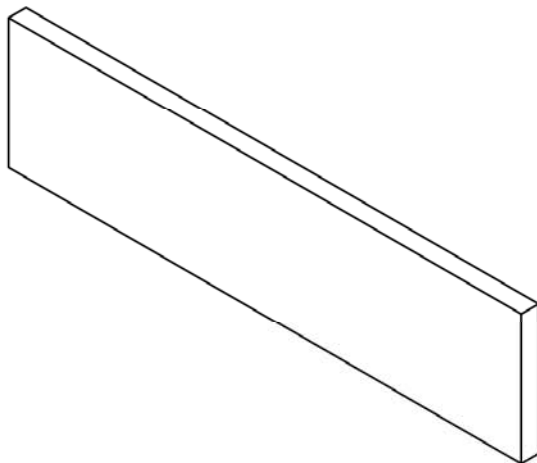
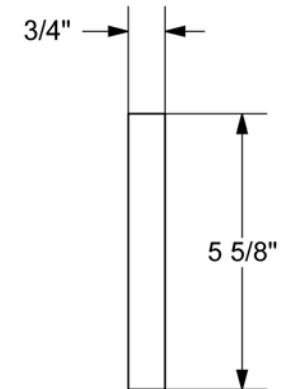
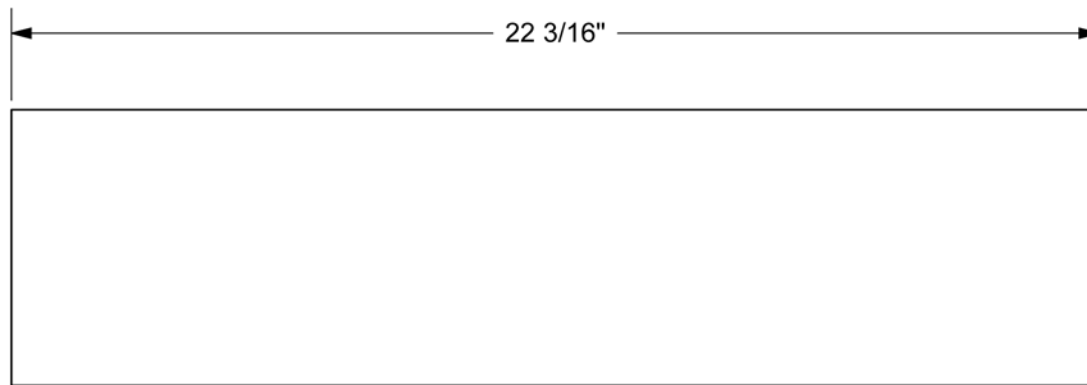




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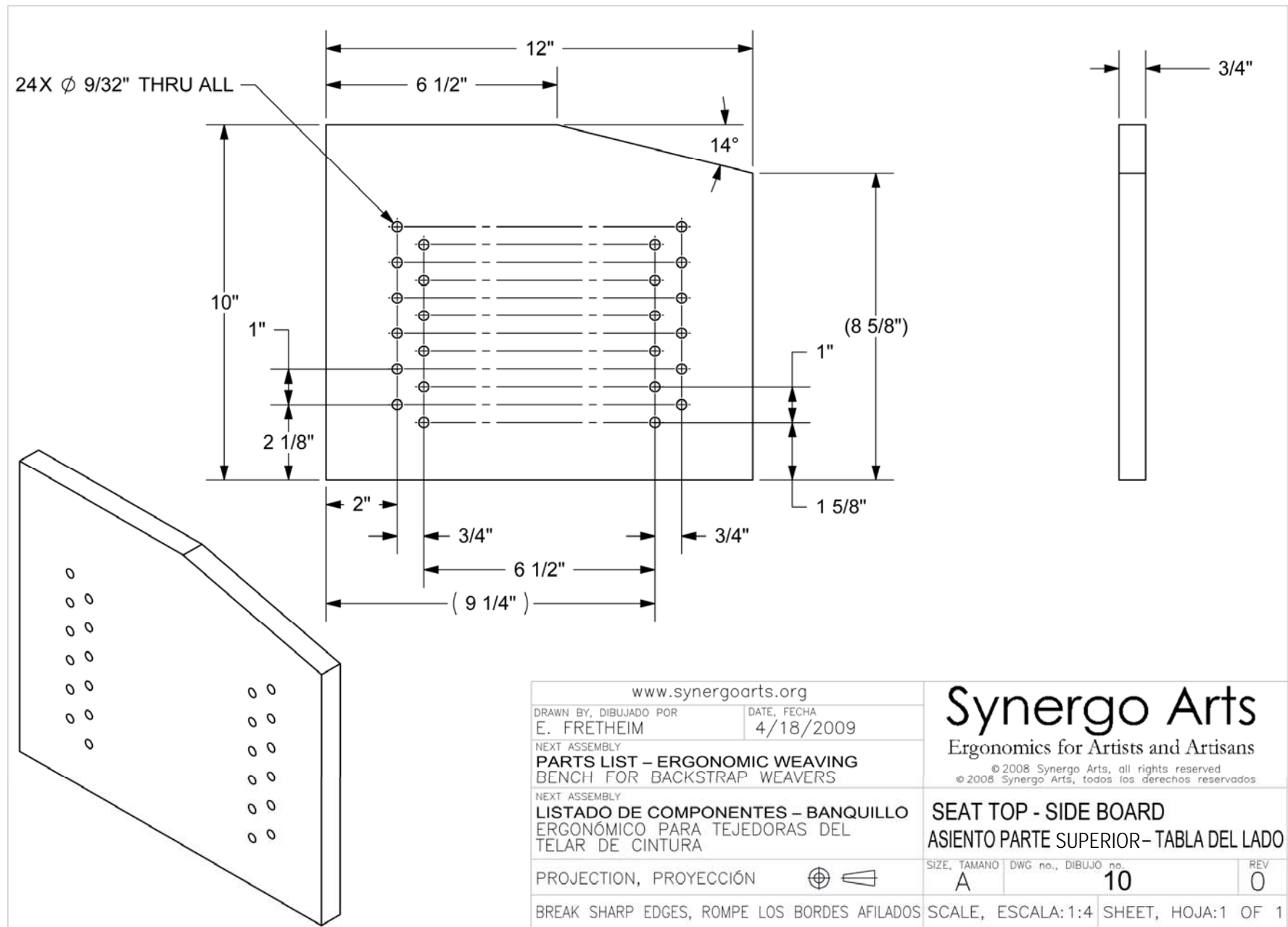
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NEXT ASSEMBLY <b>PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</b>		<b>SEAT TOP - FLAT BOARD</b> <b>ASIENTO PARTE SUPERIOR -TABLA PLANO</b>		
NEXT ASSEMBLY <b>LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA</b>				
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO A	DWG no., DIBUJO no. 8	REV 0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA: 1:4	SHEET, HOJA: 1 OF 1	



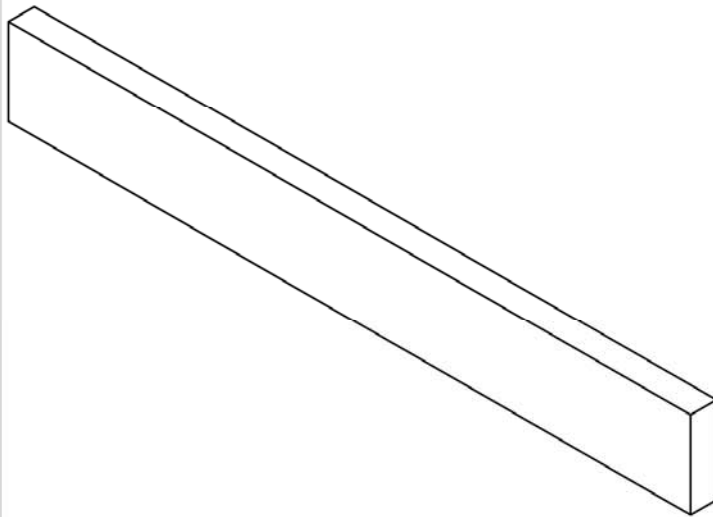
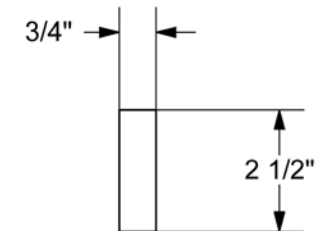
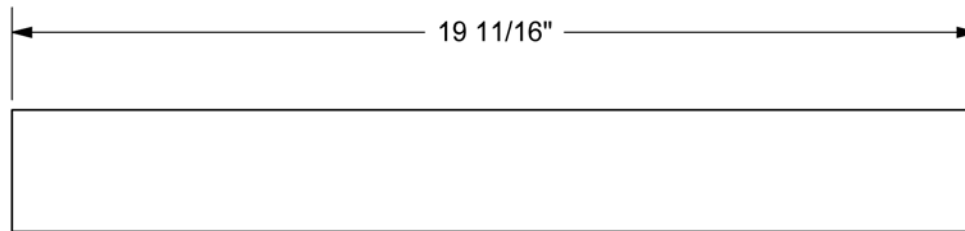


SCALE, ESCALA: 1:6

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NEXT ASSEMBLY PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS		<div>SEAT TOP -ANGLE BOARD</div> <div>ASIENTO PARTE SUPERIOR- TABLA INCLINADO</div>		
NEXT ASSEMBLY LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA				
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO A	DWG no., DIBUJO no. 9	REV 0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA: 1:4 SHEET, HOJA: 1 OF 1		



**Attention! (¡Atención!):** Before cutting Part #11, read the information on pages 21-22.  
 Antes de elaborar este componente, lea la información en las páginas 21-22.



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DRAWN BY, DIBUJADO POR E. FRETHEIM	DATE, FECHA 4/18/2009			
NEXT ASSEMBLY <b>PARTS LIST – ERGONOMIC WEAVING BENCH FOR BACKSTRAP WEAVERS</b>		<b>SEAT TOP – CROSS BOARD</b> <b>ASIENTO PARTE SUPERIOR - TRAVESANO POSTERIOR</b>		
NEXT ASSEMBLY <b>LISTADO DE COMPONENTES – BANQUILLO ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA</b>				
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO A	DWG no., DIBUJO no. 11	REV 0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA:1:4 SHEET, HOJA:1 OF 1		

## Important information about cutting Part #11

***Always check the actual thickness of your plywood, and then adjust the length of Part #11 as necessary to ensure that the seat top fits well over the seat base.***

These specifications and drawings are based on plywood that measures 3/4" in thickness. However, plywood is not always uniform, and it is likely that a sheet that is sold as "3/4-inch plywood" will be slightly thinner.

This variation in the actual thickness of "3/4-inch plywood" could affect the precise dimensions and function of the bench. While this variation must be compensated for, the good news is that only one component of the bench is affected: Part #11.

If your plywood is not precisely 3/4" thick, you must modify the length of Part #11. To determine the necessary length of Part #11 for the plywood that you are using, follow these steps:

1. Assemble the seat base;
2. Measure the outside width of the assembled seat base;
3. Add a scant 1/16".

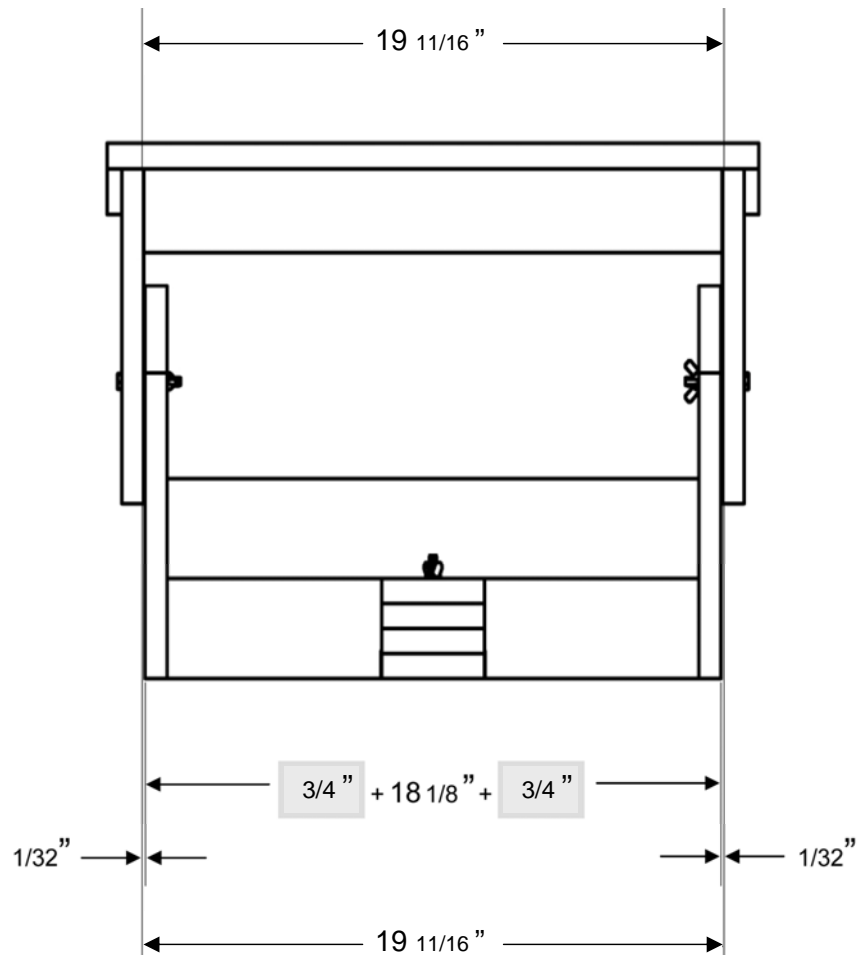
This will allow for 1/32" of clearance between the seat top and seat bottom on each side of the bench.

The fit between the seat top and the seat base needs to be close enough that the sides align well, but are not tight. There needs to be just enough play between the seat top and seat bottom to allow the weaver to adjust the height.

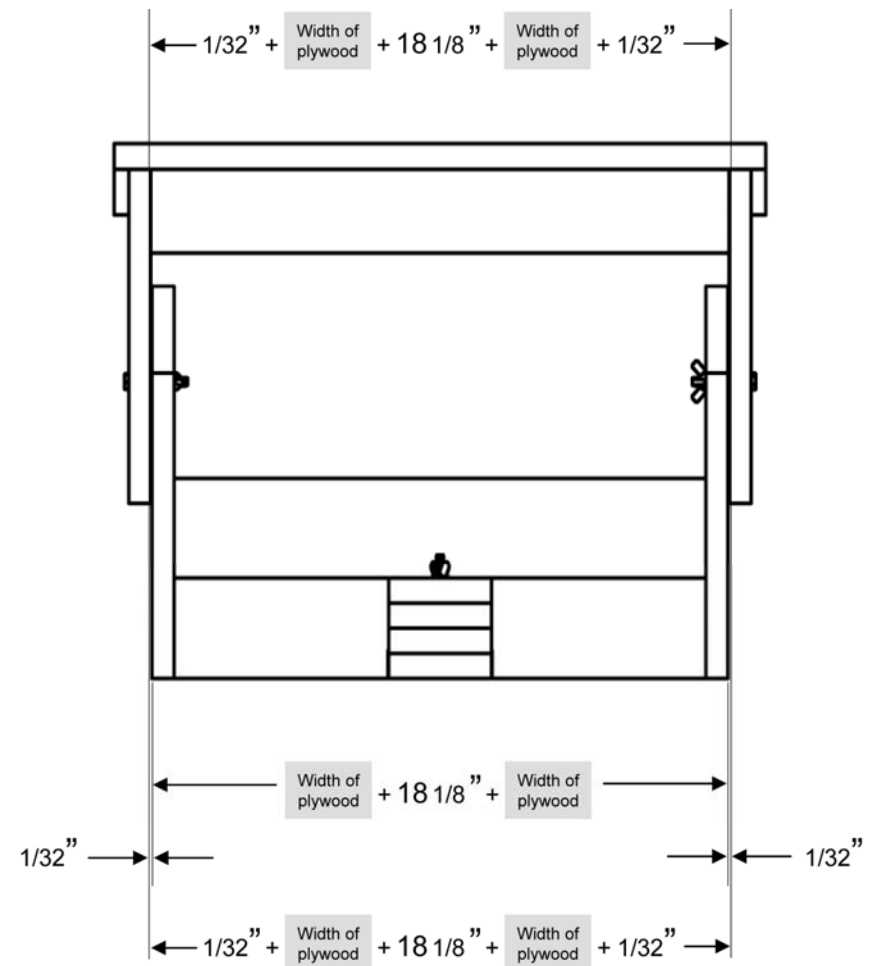
Modifying the length the cross-piece of the seat top (i.e., modifying part #11) is preferable to modifying the cross-pieces of the seat base. *Do not modify the seat base.* The length of the cross-pieces of the seat base (parts #6&7) should measure 18 1/8" independent of actual the thickness of your "3/4-inch plywood."

**The ideal case (rare):**

The plywood is exactly 3/4-inches thick.

**The common case:**

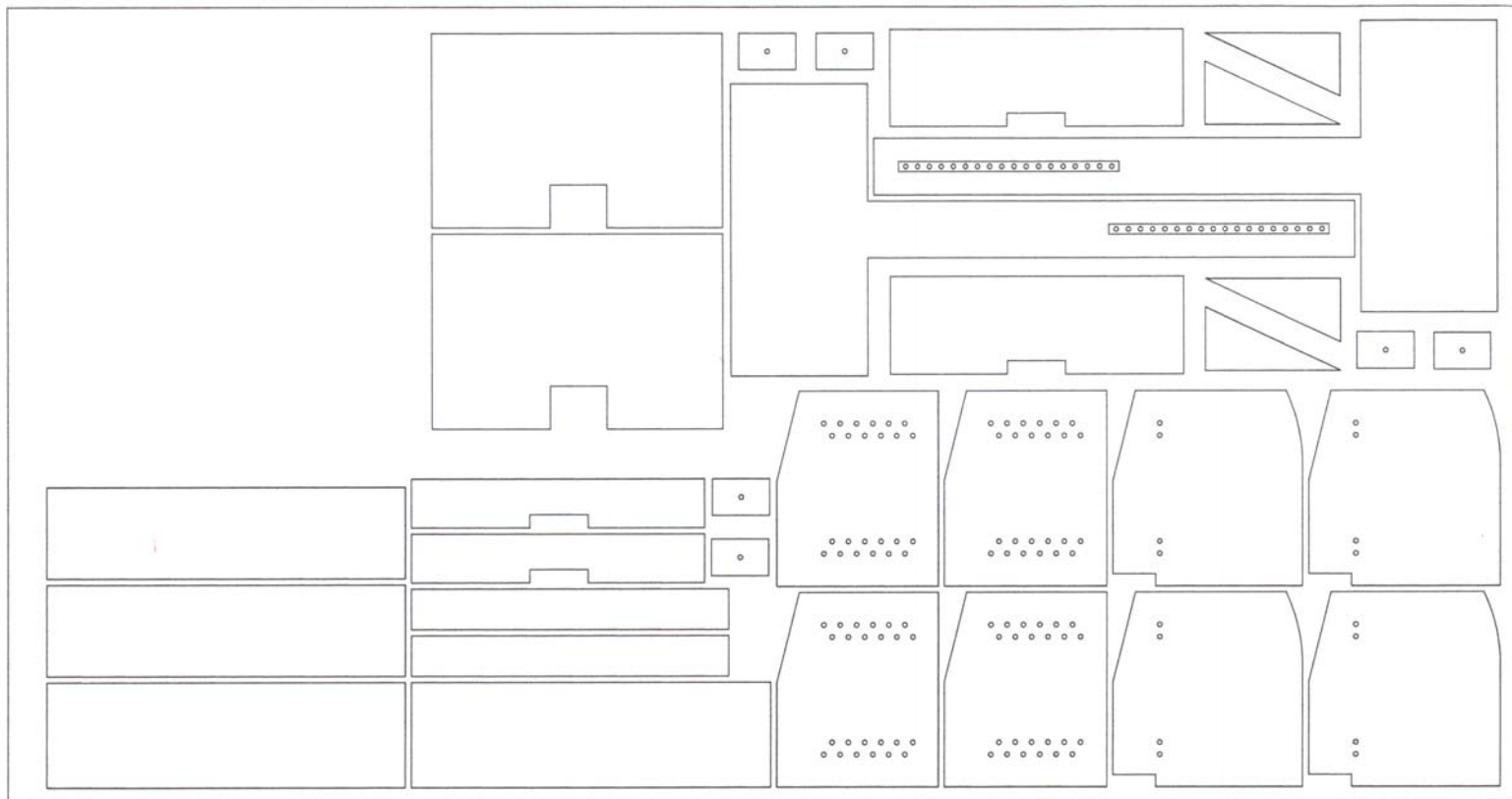
The actual thickness of the plywood is slightly less than 3/4-inches even though it is called "3/4-inch plywood."



# Layout Drawing for yield from plywood

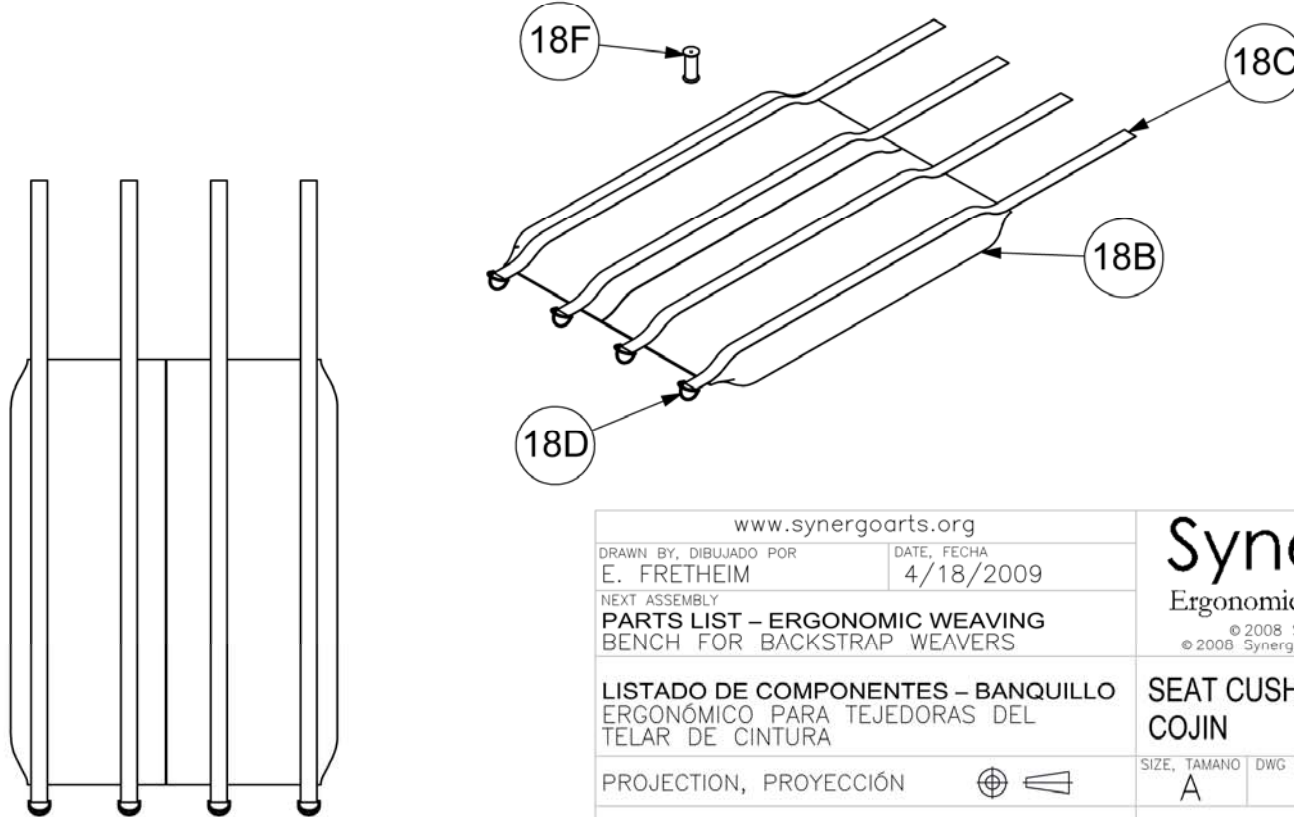
In general, a 4'x8' piece of plywood yields two benches.

For example:



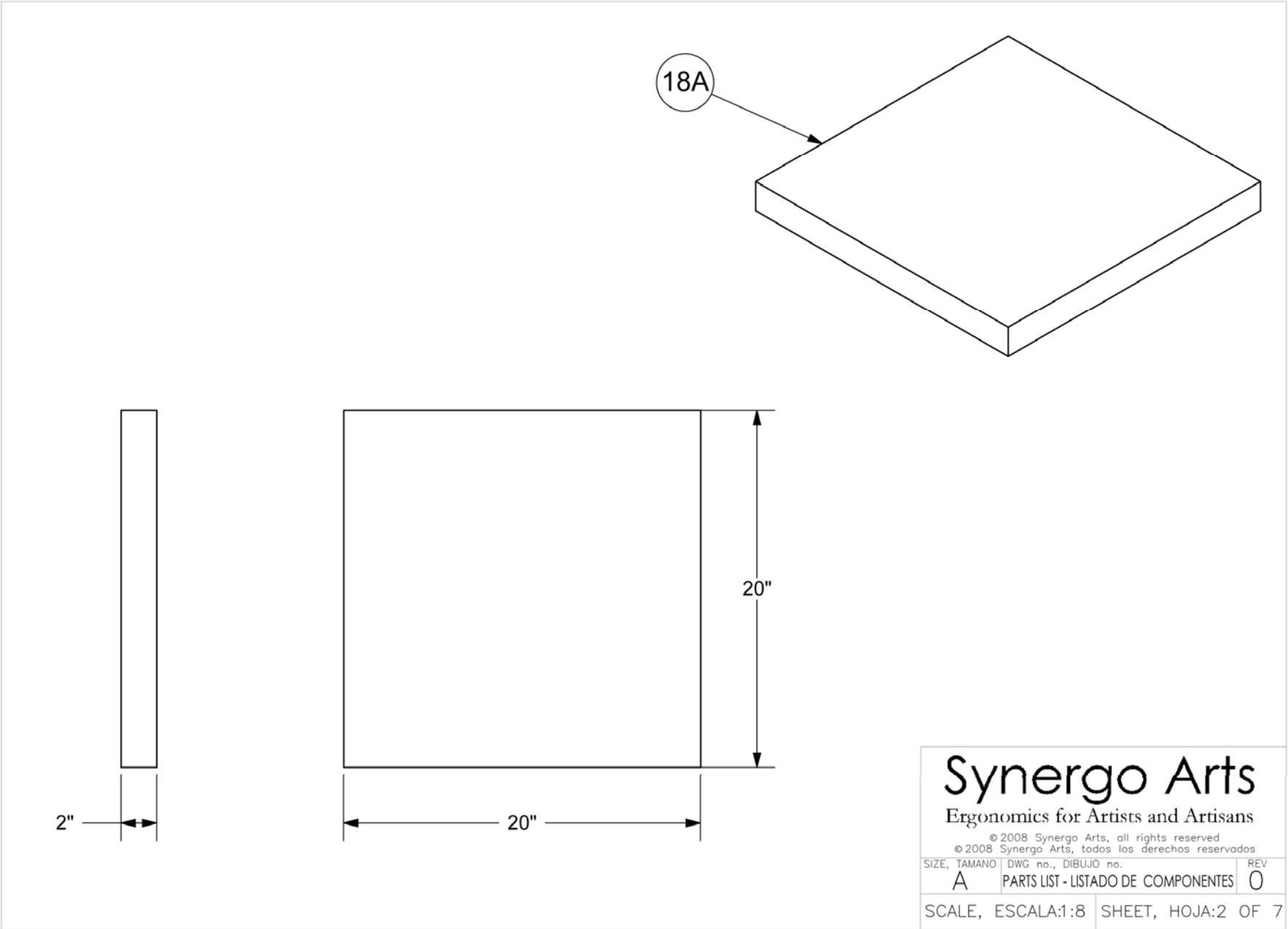
## Cushion – Details

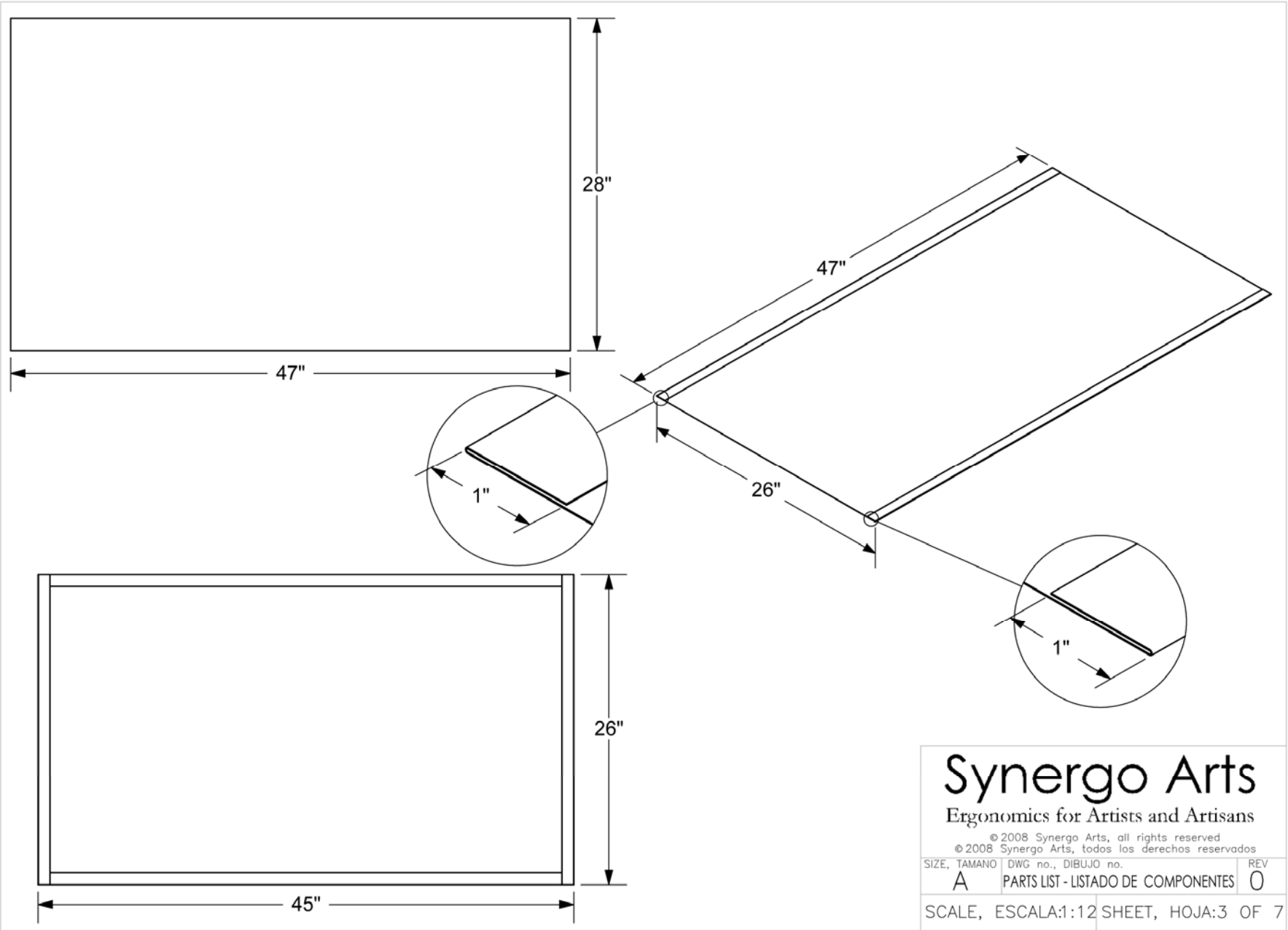
NUMBER	QTY	DESCRIPTION (SIZES ARE FOR RAW MATERIALS)	DESCRIPCIÓN (TAMANOS PERTENECEN A LA MATERIA PRIMA)
18A	1	FOAM, 20"X20"X2"	ESPONJA, 20"X20"X2"
18B	1	FABRIC, 28"X47"	TELA, 28"X47"
18C	4	STRAP, 1"X40 3/4"	CINTA, 1"X40 3/4"
18D	8	D-RING, SIZED TO FIT 18C	ANILLO-D, TAMANO PARA 18C
18E	1	VELCRO FASTENER, 1"X18"	CIERRE MARCA VELCRO, 1"X18"
18F	1	THREAD	HILO

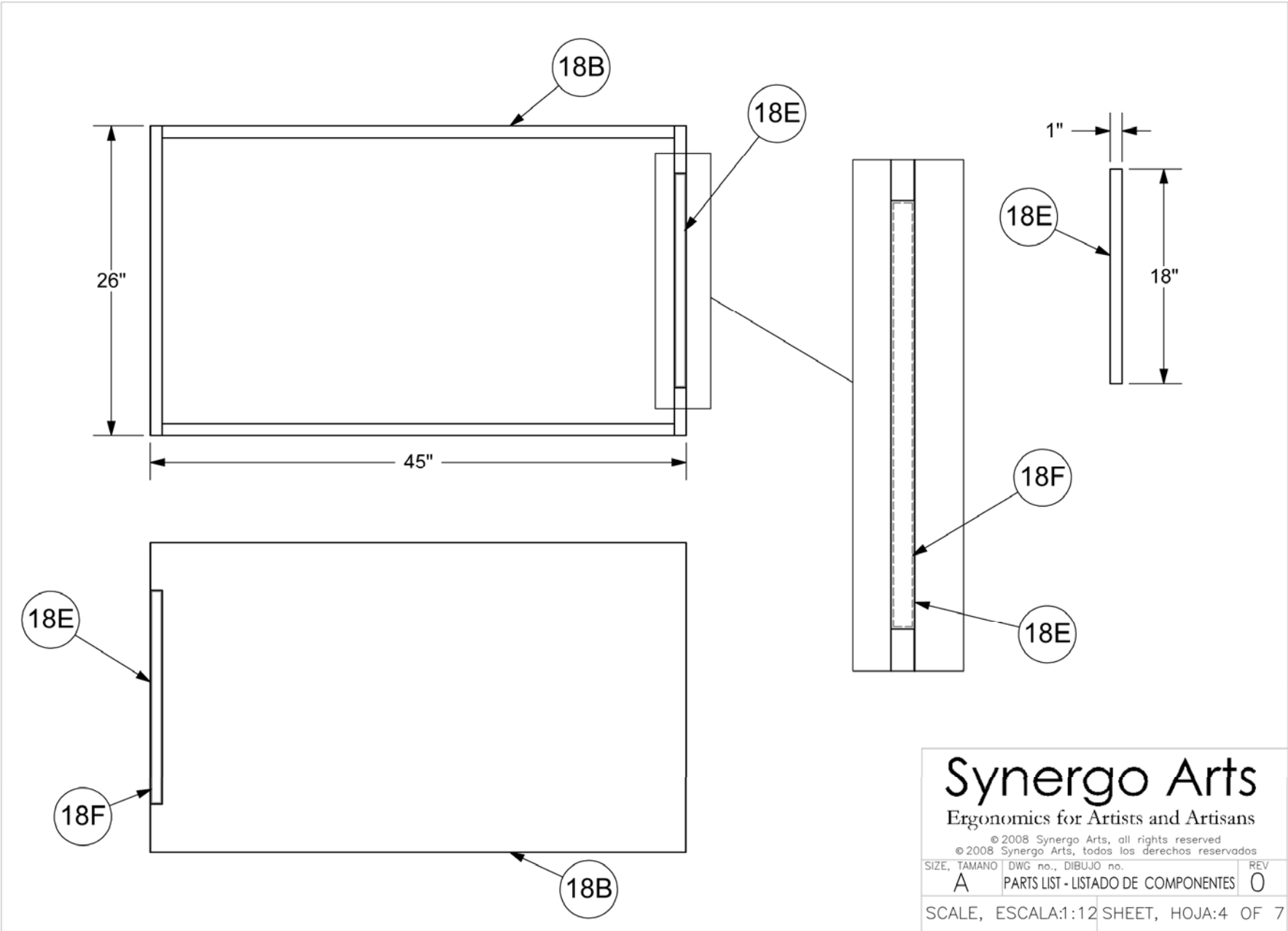


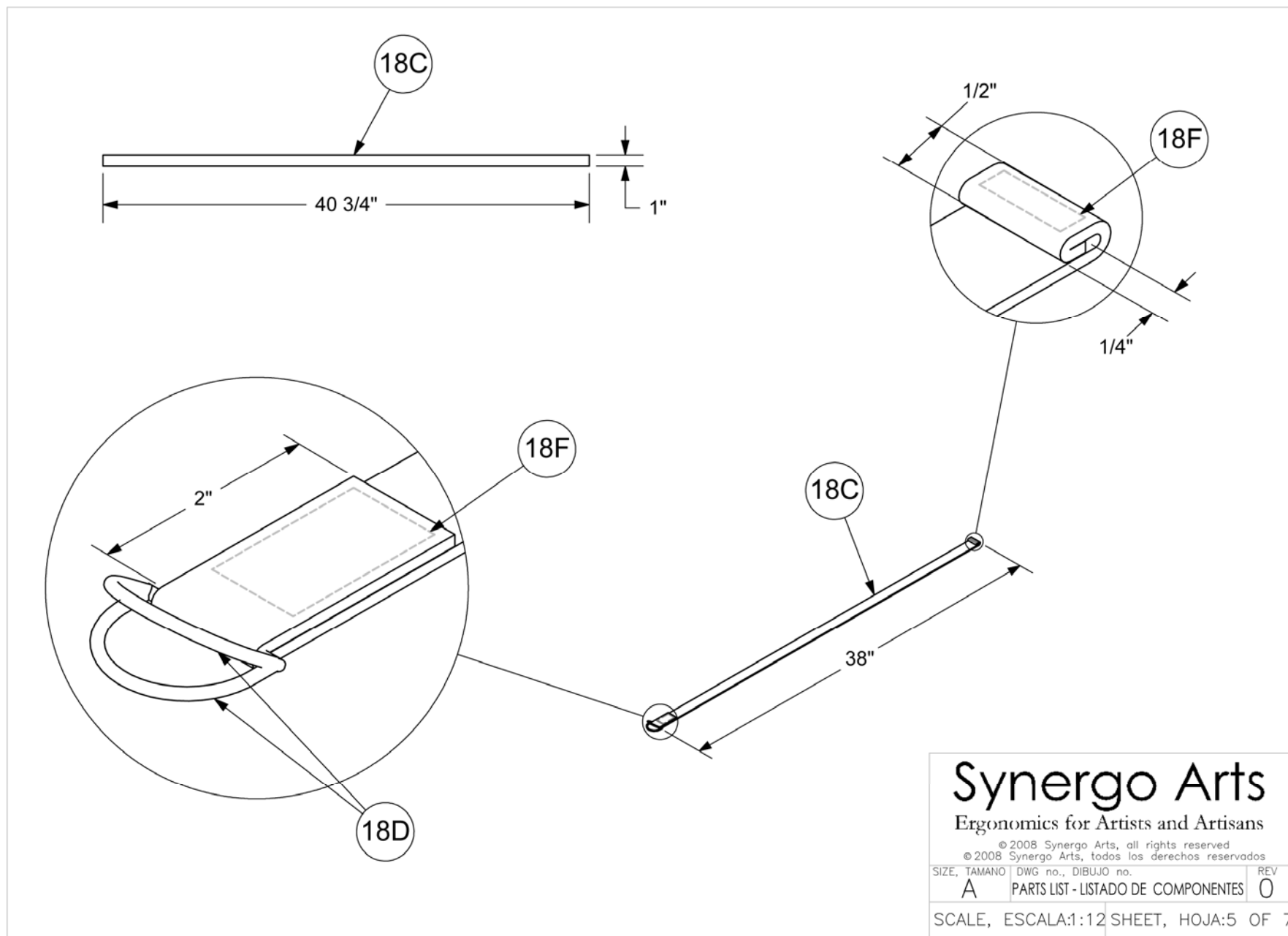
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DRAWN BY, DIBUJADO POR E. FRETHEIM	DATE, FECHA 4/18/2009			
NEXT ASSEMBLY <b>PARTS LIST – ERGONOMIC WEAVING</b> BENCH FOR BACKSTRAP WEAVERS		<b>SEAT CUSHION</b> <b>COJIN</b>		
<b>LISTADO DE COMPONENTES – BANQUILLO</b> ERGONÓMICO PARA TEJEDORAS DEL TELAR DE CINTURA				
PROJECTION, PROYECCIÓN		SIZE, TAMAÑO A	DWG no., DIBUJO no. 18	REV 0
BREAK SHARP EDGES, ROMPE LOS BORDES AFILADOS		SCALE, ESCALA: 1:12 SHEET, HOJA: 1 OF 7		

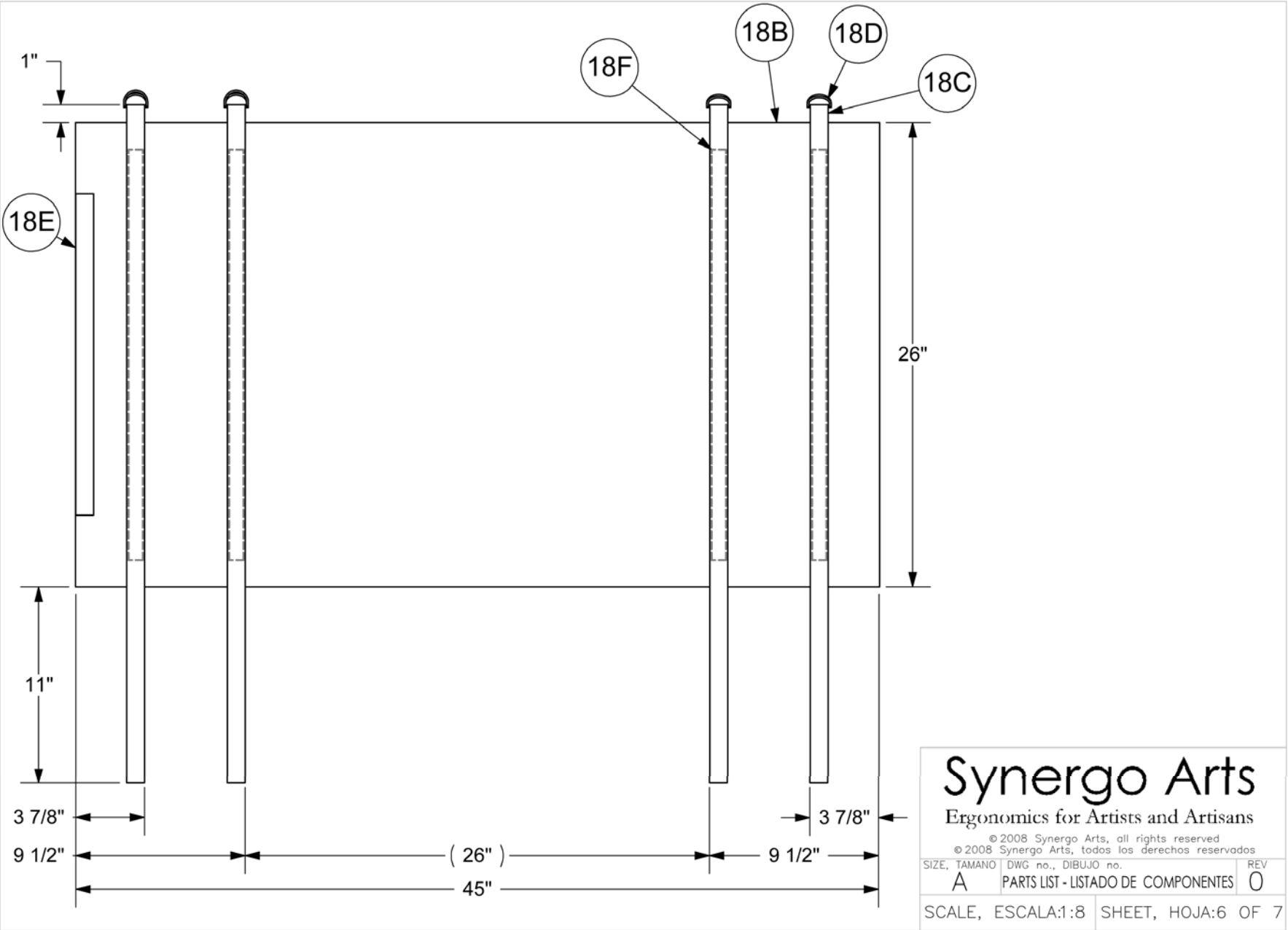


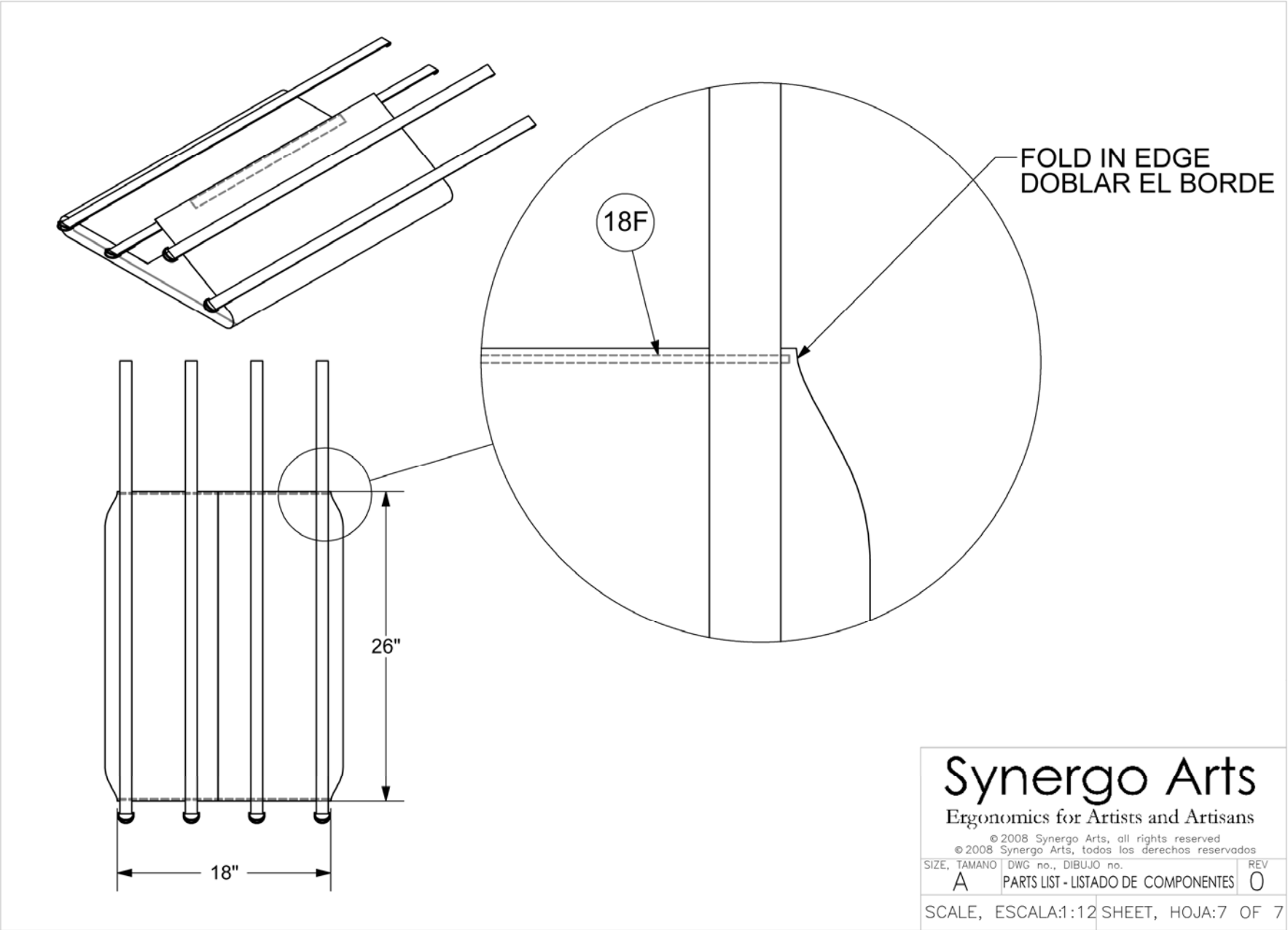












## *Quick Reference Card* – For Bench Users

As stated on *page vi* of this publication, builders and sellers of the Ergonomic Weaving Bench are responsible for ensuring that the 2-page *Quick Reference Card* is always included with each bench they sell. Providing this information with the bench will help ensure the safety of the weavers.

Print the card double-sided, on paper or cardstock.

# Quick Reference Card For Ergonomic Weaving Bench Users

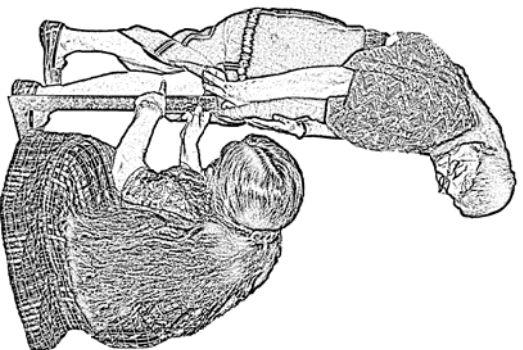
page 1 of 2

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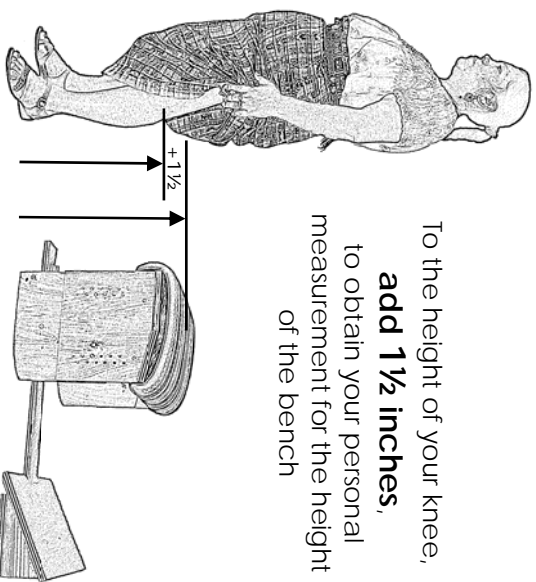


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1

Measure from the floor to the wrinkle in your skin behind your knee

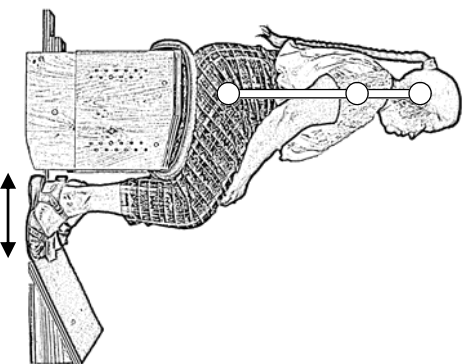


2

To the height of your knee, **add 1 1/2 inches**, to obtain your personal measurement for the height of the bench

Remember: the height of the bench is defined as the distance from the floor to the top of the cushion

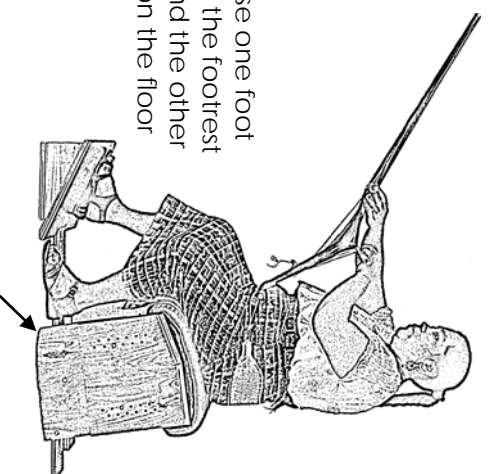
The goal is to find the bench height that allows you to sit with your hips higher than your knees



Good posture connects with the energy of mother earth

Adjust the space according to the size of the foot

3



Use one foot on the footrest and the other on the floor

Let the bench rock forward on the curve

4






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# DANGER



AVOID SERIOUS INJURY OR DEATH FROM FALLING.

DO NOT STAND ON WEAVING BENCH.



# WARNING



AVOID SERIOUS INJURY FROM PINCHING IN MOVING PARTS.

SUPERVISE CHILDREN AROUND THE BENCH.

DO NOT PLACE FINGERS, HANDS OR TOES NEAR MOVING PARTS.



# CAUTION



AVOID BACK AND BODY INJURIES FROM MISUSE AND ABUSE.

DO NOT USE ON UNEVEN, ROUGH OR WET SURFACE.

DO NOT USE BENCH WITHOUT FOOTREST.

DO NOT USE BENCH IF IT IS BROKEN OR THE SEAT IS WORN.

REPAIR OR REPLACE BENCH AND PARTS AS NEEDED.

TAKE REGULAR BREAKS EACH HOUR TO STAND, WALK AND RELAX.